

ASSESSING UNDERSTANDING OF THE PRINCIPLES OF EVIDENCE-
BASED PRACTICE AND THEIR APPLICATION:
A QUALITATIVE STUDY OF DECISION-MAKING AMONG SENIOR
MANAGEMENT IN NOVA SCOTIA'S ADDICTION SERVICES

by

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for the degree of Master of Applied Health Services Research

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DEDICATION PAGE

I would like to dedicate this work to my wife Nicole for her endless support during the course of this degree. Thank you so much, I could not have done it without you. I love you.

TABLE OF CONTENTS

LIST OF TABLES.....	viii
LIST OF FIGURES.....	ix
ABSTRACT.....	x
LIST OF ABBREVIATIONS USED.....	xi
ACKNOWLEDGEMENTS.....	xii
CHAPTER 1 INTRODUCTION.....	1
1.1 THE PROVISION OF ADDICTION TREATMENT AND PREVENTION SERVICES IN NOVA SCOTIA.....	1
1.2 CANADA’S SUBSTANCE ABUSE WORKFORCE: OCCUPATIONAL CLUSTERS.....	2
1.3 COMPETENCIES FOR CANADA’S SUBSTANCE ABUSE WORKFORCE.....	6
1.3.1 Behavioural Competency Profiles and the Development of Canada’s Substance Abuse Workforce.....	9
1.3.2 Evidence-Based Practice and the Indicators of Behavioural Competencies.....	10
1.4 EVIDENCE-BASED PRACTICE/MEDICINE: 21 ST CENTURY PERSPECTIVE.....	12
1.4.1 Historical Review.....	12
1.4.2 Evidence-Based Practice/Medicine by Definition.....	13
1.4.3 The Benefits of Evidence-Based Practice.....	14
1.4.4 Steps and Skills in the Evidence-Based Decision-Making Process.....	15
1.4.5 Hierarchy of Evidence.....	16
1.5 BARRIERS TO THE IMPLEMENTATION OF EVIDENCE-BASED PRACTICE...	16
1.6 TOOLS FOR MEASURING CAPACITY FOR EVIDENCE-BASED DECISION-MAKING.....	17
1.7 THE NEED FOR EVIDENCE-BASED PRACTICE IN ADDICTIONS.....	19
1.8 STUDY OBJECTIVES.....	20
CHAPTER 2 STUDY DESIGN.....	22
2.1 METHODOLOGICAL ORIENTATION AND THEORY.....	22

2.2	RESEARCH TEAM.....	25
2.3	DATA COLLECTION	26
2.3.1	Development of the Interview Guide.....	28
2.3.2	Participant Selection	29
2.3.3	Setting and Process for Data Collection	32
2.4	DATA ANALYSIS.....	33
CHAPTER 3	RESULTS.....	36
3.1	PARTICIPANT CHARACTERISTICS.....	36
3.2	INTERVIEW RESULTS	38
3.2.1	Themes.....	39
3.2.2	Belief in the Provision of Evidence-Based Services, Supports and Programs.....	40
3.2.3	Consensus-Based Decision-Making	41
3.2.4	Understanding of the Principles of Evidence-Based Practice.....	42
3.2.5	Skills for the Comprehensive Application of the Principles of Evidence-Based Practice	44
CHAPTER 4	DISCUSSION.....	50
4.1	SENIOR MANAGEMENT AND DECISION MAKING.....	50
4.1.1	Processes for Developing Focused Researchable Questions.....	50
4.1.2	Developing and Applying Search Strategies	52
4.1.3	Critical Appraisal Methods for Determining Validity of Knowledge.....	53
4.1.4	Processes for Integrating Internal and External Evidence	54
4.1.5	Evaluation Methods for Assessing Outcomes of Applied Decisions	54
4.1.6	Understanding of Principles of Evidence-Based Practice.....	55
4.1.7	Perception of Agency as Evidence-Based	55
4.1.8	The Presence of Evidence-Based Decision-Making in School Curriculum.....	56
4.1.9	Contextualization of Knowledge.....	56

4.2	STUDY COMPARISONS.....	57
4.3	RELIABILITY AND VALIDITY OF STUDY	59
4.4	STUDY LIMITATIONS	61
4.5	SIGNIFICANCE AND FUTURE DIRECTIONS.....	61
	4.5.1 Policy Implications and Recommendations	62
	4.5.2 Knowledge Translation Strategy	64
	REFERENCES	65
APPENDIX A	Senior Management: Behavioural Competency Indicators Linked to Evidence-Based Practice.....	73
APPENDIX B	Interview Guide.....	76
APPENDIX C	CCSA Copyright Permission Letter	77

LIST OF TABLES

Table 1	Behavioral competency profiles and levels of proficiency by occupational cluster.....	8
Table 2	Behavioural competencies requiring knowledge and use of EBP.....	11
Table 3	Role descriptions for the occupational cluster Senior Management.....	30
Table 4	Percentage values for terms used to describe thematic response frequency.....	33
Table 5	Demographics of participants in this study.....	37

LIST OF FIGURES

Figure 1	Flowchart of research process.....	27
Figure 2	Flowchart of themes based on directed-content analysis.....	40
Figure 3	Sources of information used in the EBDM process.....	53

ABSTRACT

Provision of a high standard of care in addiction treatment and prevention services is dependent upon knowledge of evidence-based practice (EBP) principles, and the skills needed to apply those principles, among the substance abuse workforce (SAW). Competency profiles for Canada's SAW define the need for skill and knowledge of EBP. Within Canada's SAW, persons within the Occupational Cluster Senior Management are ultimately responsible for decisions and therefore must possess a high level of proficiency in EBP. This proficiency has not been assessed in this group; the objective of this study was to conduct such an assessment on Senior Management from Nova Scotia's Addiction Services. Eighteen Senior Managers completed semi-structured qualitative interviews. Interviews were analyzed using content analysis, five main themes emerged. It appears that Senior Management possess an understanding of the principles of EBP, but that their knowledge and use of the skills required for their application requires further development.

LIST OF ABBREVIATIONS USED

CAMH	Centre for Addiction and Mental Health
CBO	Community-Based Organization
CCSA	Canadian Centre on Substance Abuse
DHA	District Health Authority
DTFP	Drug Treatment Funding Program
DWH	Department of Health and Wellness
EBDM	Evidence-Based Decision-Making
EBM	Evidence-Based Medicine
EBP	Evidence-Based Practice
PI	Principal Investigator
QRUD	Quality and Research Utilization Division
REB	Research Ethics Board
RSO	Research and Statistical Officer
SAW	Substance Abuse Workforce

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CHAPTER 1 INTRODUCTION

1.1 THE PROVISION OF ADDICTION TREATMENT AND PREVENTION SERVICES IN NOVA SCOTIA

In the province of Nova Scotia the Department of Health and Wellness (DHW), through its office of Addictions Services is responsible for developing and recommending standards for the delivery of addiction prevention and treatment services. The office of Addictions Services consists of nine individuals. In support of its recommendations this office assists District Health Authority (DHA) operated Addiction Services agencies in the implementation and monitoring of provincial system standards, and in monitoring the quality of prevention and treatment service. They are also responsible for maintaining provincial alcohol, other drug and gambling use surveillance.

The delivery of addiction prevention and treatment services, to the public, is the responsibility of the nine DHAs and the IWK Health Centre (Health Authority Act, 2000). The addiction prevention and treatment services workforce comprises more than 400 full time staff, located in 40 DHA operated Addiction Services agencies across the province. In the 2010-2011 fiscal year Addictions Services provided support to more than 10,000 individuals and families dealing with problems caused by the harmful use of substances and/or gambling (DHW, 2012).

The DHW states that the DHA Addiction Services agencies use “a comprehensive approach that involves providing programs, services and supports to individuals that is based on current, evidence –informed literature” (DHW, 2012). Programs, services and support offered by Addiction Services agencies include health promotion and prevention activities for persons who do not use substances or gamble, early identification, brief intervention, and treatment for individuals, families and communities experiencing problems with substance use and/or gambling. Programs for the treatment and prevention of addictions fall into one of three categories: community based services, primary care, or structured treatment. These include, but are not limited to: addiction education programs; adolescent services; alcohol ignition interlock programs; community

based services; programs for individuals charged with impaired driving; methadone maintenance therapy; nicotine services; problem gambling services; structured treatment programs; withdrawal management programs; and women treatment services. Treatment programs, services and supports offered by the provinces Addictions Services agencies are guided by recommendations in Service Standards and Best Practices documents developed by the office of Addiction Services (DHW, 2012). Standards and best practice documents do not define the specific attributes of programs; the creation of programs is the responsibility of the DHA workforce.

Addictions Services agencies in Nova Scotia are also supported by a network of four knowledge translation/exchange facilitators overseen by a provincial knowledge translation/exchange coordinator and funded through Health Canada's Drug Treatment Funding Program (DTFP). The goal of the investment "Implementation of Evidence-Informed Practices" is to support the DHAs in improving the quality and organization of substance abuse treatment systems. Core elements of this investment include: 1) To perform situational analyses of the current state of evidence-informed practices implementation; 2) To provide orientation and training of key stakeholders to ensure capacity for implementing evidence-informed practices; and 3) To develop service standards in partnership with the provincial government. These standards would provide program planners and front line workers with the necessary supports for evidence-informed practice and skills upgrading.

1.2 CANADA'S SUBSTANCE ABUSE WORKFORCE: OCCUPATIONAL CLUSTERS

Canada's SAW is an unregulated profession and its development is a priority of the Canadian Centre on Substance Abuse (CCSA). The CCSA is a non-profit organization created by an act of Parliament in 1988. Its role is to provide national leadership and evidence-based analysis and advice to mobilize collaborative efforts to reduce alcohol- and other drug-related harms. A significant portion of the CCSA work focuses on research and knowledge exchange activities and places great emphasis on translating evidence into practice. Partnerships are vital to CCSA's work, and collaboration with

stakeholders helps to ensure that CCSA's products remain relevant, current and innovative, while still reflecting the most up-to-date evidence available on substance abuse issues. The CCSA operates primarily on funding from the federal government and reports to Parliament via the Minister of Health.

In 2004 the CCSA conducted a nationwide survey of Canada's SAW. This survey asked the opinions of front line staff and senior managers at 281 Addiction Services agencies across Canada. A total of 2,720 persons (170 senior managers, 1,214 front line staff) contributed to the survey and a report of this work was released in 2005 entitled *Optimizing Canada's Substance Abuse Workforce: Results of a National Survey of Service Providers* (Ogborne & Graves, 2005). This survey determined that there was no consistent level of expertise among substance abuse professionals in Canada.

To the best of our knowledge, no study has described the educational backgrounds or professional experiences of persons working in addictions in Nova Scotia. Anecdotal evidence based on conversations with Addiction Services Senior Management in Nova Scotia suggests that the educational background of the addictions workforce is similar across the provincial DHA's however, composed primarily of persons with professional degrees in social work, nursing, clinical psychology, counselling and medicine.

As discussed above, workforce development is a priority of the CCSA. In 2010 the CCSA, under the guidance of the National Advisory Group on Workforce Development, identified seven occupational clusters (job groups) that are common to most addictions prevention and treatment agencies in Canada. These occupational clusters were developed through research and consultation with subject matter experts and validated through focus groups (of professionals working within these occupational clusters) from all Canadian provinces and territories. These clusters and their descriptors were presented in the document *Competencies for Canada's Substance Abuse Workforce* (CCSA, 2010.) They include:

Administrative Support: Persons who provide administrative support to substance abuse professionals and, at times, clients. Duties may include office management and administration, communicating with clients in person or on the phone, coordinating office activities and logistics, and related administrative duties. Example job titles: Administrative Assistant, Administrator, Regional Administrator, Clinic Technician.

Counselling: Persons who provide counselling services to individuals, groups, and family members for substance abuse and related problems as required. Duties also include liaising with other substance abuse professionals to create treatment plans for a broad range of substance abuse issues. Example job titles: Counsellor, Addictions Counsellor, Alcohol & Drug Counsellor, Substance Abuse Counsellor, Intake Counsellor, Therapist, Clinical Therapist, Recreation Therapist.

Health Promotion: Persons who develop and deliver education and awareness programs in the substance abuse field to a wide range of individuals, groups and audiences. Duties may include assessing emerging substance abuse issues in targeted groups to develop timely and effective education and awareness strategies, and working closely with other agencies and community coalitions to develop, deliver and evaluate substance abuse awareness initiatives and education programs. Example job titles: Health Promotion Specialist, Health Education Specialist, Prevention Specialist/Coordinator, Health Educator, Health Promotion & Protection Specialist/Worker.

Senior Management: Persons who provide overall direction in all aspects of the agency's functioning and all services it provides. Duties may include providing leadership in the development and implementation of strategic and operational plans; managing finances, and HR strategy and public relations. Example job titles: Executive Director, Clinical Director, Program Director, Program Manager, Controller, Office Manager.

Supervision: Persons who provide direction for development, functioning and evaluation of program services and staff. Duties may include overseeing and evaluating the quality

and efficiency of services and provides supervision to staff, and working in conjunction with management to develop and deliver the goals and objectives of the organization. Example job titles: Clinical Supervisor, Non-Clinical Supervisor, Senior Counsellor, Lead Clinician, Manager, Coordinator.

Support and Outreach: Persons who provide encouragement, emotional support, help, and advice on practical matters to clients, their families and communities. Duties may include coordinating support and outreach activities that may include: coordination of substance abuse and related services, motivational counselling, brief assessment and referral, conducting education and information sessions, monitoring and supporting daily activities of clients. Example job titles: Support Worker, Outreach Worker, Alcohol Worker, Drug Worker, Substance Abuse Worker, Drug Outreach Worker, Substance Abuse Practitioner, Community Outreach Worker, Community Liaison Worker, Attendant.

Withdrawal Management: Persons who provide medical and/or non-medical support and withdrawal management services to substance abuse clients. Duties may include working with other professionals in the substance abuse field to create and deliver withdrawal management and associated treatment plans to meet the needs of clients. Example job titles: Withdrawal Management (Detox) Worker, Detox Nurse, Specialty Nurse, Withdrawal Management (Detox) Counsellor, Attendant.

To the best of our knowledge there has been no study to define occupational clusters in Nova Scotia's addictions workforce. However, anecdotal evidence based on conversations with Mr. Gregory Purvis, Director of Addictions Services DHA's 4, 5, 6 and co-chair of the CCSA National Action Group on Workforce Development, which defined the above described occupational clusters, suggests that these clusters typify the workforce structure of Addiction Services in the Nova Scotia DHAs.

1.3 COMPETENCIES FOR CANADA’S SUBSTANCE ABUSE WORKFORCE

As described above, the 2005 survey *Optimizing Canada’s Substance Abuse Workforce: Results of a National Survey of Service Providers* determined that there was no consistent level of expertise among Canada’s SAW. This work demonstrated a crucial need for the identification and development of competencies required to perform effectively in the substance abuse field. In response to this need, the CCSA, under the guidance of the National Advisory Group on Workforce Development, set out to identify competencies. The CCSA defines competencies as “specific, measurable skills, knowledge, attitudes, and values needed to effectively perform a particular job function or role. They are typically learned and developed through work, education, training, and other life experiences” (CCSA, 2010, pI-4). Through research and consultation with subject matter experts across Canada, two sets of competencies: technical and behavioral were developed. The first phase of this project was completed in 2007 and produced a set of 18 technical competencies. The second phase of this work, completed in 2009, resulted in the identification of 18 behavioural competencies and a reduction in the number of technical competencies to 14. Subsequent consultation, with approximately 120 people in focus groups across Canada, led to the validation of the behavioural competencies, and identified appropriate proficiency levels for the seven occupational clusters described for Canada’s SAW. The work was presented in the 2010 document *Competencies for Canada’s Substance Abuse Workforce* (CCSA, 2010). Directors of Addictions Services in Nova Scotia’s DHA adopted the CCSA competency profiles in 2011.

CCSA Profile of Technical Competencies

The CCSA (2010) defines technical competencies as “the knowledge and abilities required when applying specific technical principles and information in a job function or role” (pii). Technical competencies tend to be learned while in school, or on the job. Examples of technical competencies might be Counselling and Pharmacology, skills that an addictions counsellor might learn at a university or continuing education event.

CCSA Profile of Behavioural Competencies

Behavioral competencies “are the abilities, attitudes and values required to perform effectively in a job function or role” (CCSA, 2010, pii). Behavioral competencies are not explicitly taught, as are the technical ones, rather they are “learned and developed through life experiences” (CCSA, 2010, piii). Behavioral competencies are the “how” of performing a job. Analytical thinking and decision-making is an example of a behavioral competency. The objective of competencies is to provide an outline of the skills and knowledge that are required for an individual to work effectively in their job. Ergo, the competencies outlined by the CCSA represent those that are required by substance abuse professionals in order to meet expectations. Following the delineation of the competencies, the CCSA held several focus groups and teleconferences to promote awareness of the competencies, and to define the alignment of specific competencies with the expectations (role descriptions) of the occupational clusters for Canada’s SAW. The results of this work are presented in *Competencies for Canada’s Substance Abuse Workforce* and shown in Table 1 (CCSA, 2010).

Table 1. *Behavioral competency profiles and levels of proficiency by occupational cluster* (used with permission see Appendix C)

Behavioural Competency Profiles

1 = Introductory level 2 = Basic level 3 = Intermediate level 4 = Advanced level

* indicates 80% agreement ** indicates 60% agreement Blank cell indicates less than 60% agreement

Number on its own indicates 100% agreement

Competencies	Levels of Proficiency by Occupational Cluster						
	Administration Support	Counselling	Health Promotion	Senior Management	Supervision	Support & Outreach	Withdrawal Management
Adaptability/Flexibility	1	3*	3	4**	3*	3	3
Analytical Thinking and Decision Making	1*	3**	2*	4*	3*	2*	2*
Client-centred Change		3*				3	3*
Client Service Orientation	1*	2**			3*		
Collaboration and Network Building			3*	4*		2*	
Continuous Learning	2	2	3	4	3	2	2
Creativity and Innovation			3	4*	3*	2**	
Developing Others			3*	4**	3		
Diversity and Cultural Responsiveness	1	3	3	4	3	3	3
Effective Communication	2	3	3	4	3*	3	3
Ethical Conduct and Professionalism	1	2	2	4	3	2	2
Interpersonal Rapport/Savvy	2	3*	3*		3**	3*	3*
Leadership				4	3*		
Planning and Organizing	2		3*	4*	3*	2	3*
Self Care	2	3	2	4*	3	3	2
Self Management	2	2**				2*	3*
Self Motivation and Drive			2**				3*
Teamwork and Cooperation	2	2*	2*	4**	3**		2

As shown in Table 1, four levels of proficiency (introductory, basic, intermediate and advanced) have been developed for the behavioural competencies. These are intended for use in defining the competencies and degrees of proficiency in those competencies for persons working within specific occupational clusters. To support the definition of degree of proficiency, lists of behavioural indicators have also been identified. These indicators are examples of successful (observable) performance in the competencies.

While the CCSA currently lists competencies in two categories it acknowledges that this categorization reflects the way in which the research on the competencies was conducted, and does not in fact signify a true distinction between the two sets. This conclusion has been supported by a literature review and comparative analysis of the two categories of competencies which showed the technical and behavioural competencies to be strongly interlinked (CCSA, 2010). For example, although behavioural competencies are not explicitly taught, there are technical skills that a person must possess in order to demonstrate proficiency in many of the ascribed behavioural indicators.

1.3.1 Behavioural Competency Profiles and the Development of Canada's Substance Abuse Workforce

Development of behavioural competencies within Canada's SAW will enhance professionalism and excellence within the addictions field by defining knowledge, values and skill sets for the SAW. Such definition will support employers in hiring and staff development (i.e. design of education and training curriculum that is responsive to expectation and need). Ultimately this will provide Canadians with a more consistent quality of service from its SAW.

The CCSA recognizes that these competencies are newly defined and as such, hiring to date will not have necessarily followed the guidelines related to the competencies, but it states that these competencies will, now that they are documented, likely be adopted by agencies across Canada. If such adoption takes place, new hires will have to possess the necessary competencies and levels of proficiencies. This will ensure that the next generation of substance abuse workers will possess all the skills and abilities required to provide the highest levels of care and service. While this addresses the needs of the next generation, or rather, sets the standards for the next generation, it does not address the needs of the current workforce employed in the field of substance abuse. The CCSA was not unaware of this fact and when developing the competencies they included professionals from the field of professional development so that methods for adopting the competencies into the current workforce could be established. Implicit in this action is the understanding that not all members of the current SAW possess all of the required

competencies or necessarily, the required level of proficiency for the competencies that they do possess. However, before effective plans may be made on how to develop the newly defined competencies in the current SAW, understanding of their current knowledge and skills must be gained.

1.3.2 Evidence-Based Practice and the Indicators of Behavioural Competencies

As described above, behavioural competencies are not explicitly taught. There are however certain technical competencies that a person must possess in order to be proficient in the ascribed behavioural indicators. Included among these is competency in Evidence-Based Practice (EBP), described in detail in section 1.4. Evidence-Based Practice is defined in the context of this thesis as “a formalized process of using the skills comprehensively for identifying, searching for and interpreting the results of best scientific evidence, which is considered in conjunction with the relevant expertise (experience and judgment), the client’s preferences and values, and the context within which decisions are being made”. A review of the indicators for behavioural competencies reveals that competency in EBP is required to achieve proficiency at a basic level, in 12 of the 18 behavioural competencies. Descriptions of these competencies are provided in Table 2 (CCSA, 2010). Furthermore, all occupational clusters contain within their profiles competencies that require competency in EBP. Persons in the occupational cluster Senior Management, being ultimately responsible for all decisions pertaining to policies, programs and services, require high levels of proficiency in many competencies requiring knowledge of, and skill in, EBP. Indicators associated with the competencies requiring knowledge of, and skill in EBP for Senior Management, are provided in Appendix A. No study has evaluated the knowledge of the principles of EBP or the skills needed to apply those principles in the Nova Scotia SAW.

Table 2 *Behavioural competencies requiring knowledge and use of EBP*
(Used with permission, CCSA, 2010)

Competency Title	Competency Description
Adaptability/Flexibility	Willingly adjust one's approach to meet the demands of constantly changing conditions, situations and people and to work effectively in difficult or ambiguous situations
Analytical Thinking and Decision Making	Gather, synthesize and evaluate information to determine possible alternatives and outcomes and make well-informed, timely decisions. Includes critical thinking and reasoning skills.
Continuous Learning	Identify and pursue learning opportunities to enhance one's professional performance and development and the effective delivery of high-quality programs and services.
Creativity and Innovation	Using evidence-based practices in innovative and creative ways to initiate both effective new ways of working and advances in the understanding of the field of practice. Innovation and creativity are achieved in translating research into practice to optimize improvements in service delivery and professional practice.
Developing Others	Facilitate and motivate sustained learning and create opportunities and resources, as well as promote and respect others' needs for ownership of learning outcomes. Includes creation of a continuous learning environment that fosters positive growth in both work and public contexts among peers, clients, client families, communities, and other groups (recipients).
Effective Communication	Articulates both verbally and in writing across a range of technologies in a manner that builds trust, respect and credibility and that ensures the message is received and understood by the audience. Includes active listening skills and congruent non-verbal communication.
Self Care	Deliberately and continuously apply professional and personal self care principles to oneself and, at times, others to sustain optimal productivity while maintaining physical, mental, spiritual and emotional health.
Leadership	Help others achieve excellent results and create enthusiasm for a shared vision and mission, even in the face of critical debate
Ethical Conduct and Professionalism	Provide professional services according to the principles and values of integrity, competence, responsibility, respect, and trust to safeguard both self and others. Includes the development of professionalism and ethical behavior in self and others (individuals, groups, organizations, communities).

Competency Title	Competency Description
Self Motivation and Drive	Remain motivated and focused on a goal until the best possible results are achieved, with both passion for making a difference in the substance abuse field and persistence despite confronting obstacles, resistance and setbacks.
Client-Centred Change	Enhance, facilitate, support, empower and otherwise increase client motivation for positive change. Positive change is achieved by involving the client actively in the change process and encouraging the client to take responsibility for outcomes he or she achieves. Clients may be individuals, groups, communities and organizations.
Client Service Orientation	Provide service excellence to clients (which can include individuals, groups, communities and organizations). Includes making a commitment to serve clients focusing one's efforts on discovering and meeting client's needs within personal, professional and organizational capacities and boundaries.

1.4 EVIDENCE-BASED PRACTICE/MEDICINE: 21ST CENTURY PERSPECTIVE

1.4.1 Historical Review

In the 21st century evidence-based medicine (EBM) and its process "evidence-based decision making" (EBDM) have been defined as “the integration of the best research evidence with clinical expertise and patient values” (Sackett, Richardson, Rosenburg, Haynes, 2000). Despite much recent attention, EBDM is far from being a new concept. One of its roots may be traced back as far as Aristotle who, in a written treatise on the practice of medicine, argued that a competent physician should strive to combine both clinical skill and empirical knowledge when treating a patient (Goldner, Abbass, Leverette, & Haslam, 2001, cf. Dunne, 1993).

The modern roots of EBDM begin in the 1970's. Prior to this time period decision-making in the field of medicine did not exist as a field of study. It was assumed that through the rigors of medical education, subsequent continuing education, hands-on experience and exposure to other colleagues, physicians possessed and retained all of the skills necessary to make the correct decisions regarding, more or less, all things medical (Eddy, 2005). This decision-making process could be classified as ‘the art of medicine’

or 'clinical judgment'. However, by the early 1970's a body of knowledge was beginning to coalesce that would lead to the eventual rejection of the aforementioned assumption pertaining to physician decision-making (Eddy, 2005). In 1973 Wenneburg and Gittelsohn published a paper that documented wide variations in practice among physicians; they discovered that when different physicians were faced with essentially similar patients, they did not in fact, make similar recommendations. This being the case, every physician could not be making the correct decision all of the time. Subsequent to these findings, researchers at the Research and Development Corporation (RAND) published a series of studies in the 1980s highlighting the fact that a significant number of procedures performed by physicians were inappropriate, even when considered by the standard of physician experts (Chassin, Kosecoff, Solomon, & Brook, 1987). Another major concern noted during this time period was the significant lag time between clinical research and its application to clinical practice. It has been estimated that during this time period only 15 percent of medical practices were based on clinical trials (Chassin et al., 1987). Further, as the use of clinical trials increased it was discovered that many of the procedures being performed by physicians were ineffective. All of the aforementioned factors helped to lay the background for the work that the Evidence-Based Medicine Working Group, led by Gordon Guyatt (1992), would do when developing the philosophy of EBM and its application process EBDM.

1.4.2 Evidence-Based Practice/Medicine by Definition

The 21st century incarnation of EBM and its process EBDM were described in 1992 by Gordon Guyatt and colleagues at McMaster University. At this time an EBDM process was developed to provide busy physicians with a quick and appropriate method for keeping current with new practices and procedures. Its success in medicine led to its integration into the competency profiles of most healthcare professions and its principles are now reflected in the curriculum framework of all Canadian degree-based health programs. In addition to helping the clinician, the EBDM process has also provided a valuable tool in its capacity to support, at the organizational level, many aspects of healthcare decision-making. Today the EBDM process is frequently employed in the development of programs, services, policies, clinical practice guidelines, and standards

and best practices. In recognition of its importance to many areas of healthcare the definition of EBM has been broadened and the term Evidence-Based Practice (EBP) is now routinely employed.

Evidence-Based Practice and its process assume two fundamental principles:

First, scientific evidence alone is never sufficient to make a decision. EBDM recognizes that the evidence from scientific research is only one component of the decision-making process and does not tell a decision-maker what to do. Evidence-based decisions are based on the integration of best scientific evidence with evidence derived from relevant experience and judgment, patient's preferences and values, and the clinical/patient circumstances (Greco, & Eisenberg, 1993). Second, a hierarchy of evidence exists to guide decision-making. Evidence-based decision-making is a structured process which incorporates a formal set of rules for interpreting evidence and places a lesser value on influence or tradition. This approach is in contrast to traditional decision-making, which relies more on intuition and the use of information gained by consulting authorities (colleagues and textbooks) (Evidence-based Medicine Working Group, 2002; NHS Centre for Reviews and Dissemination, 1997). In the context of this thesis Evidence-Based Practice is defined as "the formalized process of using the skills comprehensively for identifying, searching for and interpreting the results of the best scientific evidence, which is considered in conjunction with the relevant expertise (experience and judgment), the client's preference's and values, and the context within which decisions are being made". Simply put, EBP helps decision-makers in health care to collect and critically appraise all best evidence for the purpose of guiding decisions.

1.4.3 The Benefits of Evidence-Based Practice

A number of benefits have been ascribed to the use of EBP. These include, but are not limited to: increases in treatment quality and effectiveness and consistency in practice; better use of health care resources; and it speeds up the process of moving evidence into practice (Sackett et al., 2000).

1.4.4 Steps and Skills in the Evidence-Based Decision-Making Process

The principles of EBP are inherent in the EBDM process. The process defines a set of skills which when comprehensively applied produce effective decision-making. The skills needed to apply the EBDM process include:

1) Formulating focused researchable questions: The framing of one's question into the right question is the essential first step to decision making and forms the basis for the search for information. In the absence of clear understanding of one's problem/population and the desired outcomes for that problem/population the researcher runs the risk of: 1) Becoming overwhelmed with voluminous and irrelevant information; 2) Missing relevant important information to the decision; and 3) Selecting interventions that will not result in the desired outcomes and therefore potentially cause harm.

A number of helpful processes have been defined that guide the decision maker in question development (Schardt, Adams, Owens, Keitz, & Fontelo, 2007). The PICO process is an example of one commonly used tool (Sackett et al., 2000). This process guides the decision maker through the consideration of (a) relevant patient characteristics and problem(s), (b) leading intervention, (c) comparator intervention, (d) clinical outcomes or goals. As described above, in addition to developing clarity of the task at hand, processes like PICO also direct the decision-maker in their search for relevant information, helping to define key terms, types of evidence and information required to solve the problem and define outcome measures that will be used to evaluate the effectiveness of the intervention.

2) Finding "evidence" to answer the question: Evidence is often times described as being either internal or external. External evidence includes, but is not limited to, information obtained from: peer-reviewed scientific research; gray literature; textbooks; institutional databases; surveys; and relevant experts. Internal evidence includes, but is not limited to: knowledge acquired through formal education and training; general experience accumulated through daily practice; and specific experience gained through individual clinician-client relationships (perspective of client's experiences and judgments).

3) Critical appraisal of the external evidence: This process should answer three questions: (1) Are the results valid? (2) Are the results important? (3) Do the results apply to my specific needs? (e.g., is the context (background, situation) of my needs so different from those in the study that the findings do not apply?)

4) Integrating external and internal evidence: The two sources of information (external and internal) may be supportive, non-supportive, or conflicting. In the case of disagreement, a hierarchy of evidence is used to guide decision-making.

5) Evaluation of decision making process: Once the decision has been made, the process and the outcome are considered and opportunities for improvement are identified.

1.4.5 Hierarchy of Evidence

Since the introduction of the EBM movement, increased attention has been paid to what exactly constitutes evidence, as well as to the strength of the evidence once it has been identified (Lavis, Oxman, Lewin & Fretheim, 2009). The generally accepted model of evidentiary strength sets evidence derived from systematic reviews, meta-analyses and randomized controlled trials as the gold standard, with other types of evidence (clinical trials without randomization, case-control studies, time series studies, relevant expertise, internal data) falling below (Oxman, Vandvik, Lavis, Fretheim, & Lewin, 2009).

1.5 BARRIERS TO THE IMPLEMENTATION OF EVIDENCE-BASED PRACTICE

A number of barriers have been identified when applying evidence to clinical decisions (Lizarondo, Grimmer-Somers, & Kumar, 2011; Iles & Davidson, 2006; Metcalfe et al., 2001). These include but are not limited to: 1) A lack of recognition of the importance of EBP to the delivery of a high standard of care; 2) A lack of time and resources for applying the principles of EBP via the skills defined in the EBDM process (i.e. to search for, access, critically appraise, and interpret the evidence, and subsequently evaluate outcomes). Resources are typically directed towards service delivery, treatment and educational activities, with few funds available for integrating new evidence into practice; 3) A lack of belief in the trustworthiness of the EBDM process; 4) A lack of

organizational support for implementing new evidence-based practices (front line staff may be resistant to adopt evidence based strategies when new research contradicts their current clinical practices) and; 5) A lack of access to sources of external evidence (e.g. bibliographic databases, relevant expertise, and information regarding patients' expectations). While one cannot downplay the great importance of these potential barriers, all lack relevance if decision-makers in the field of addiction services lack competency in the EBDM process to begin with (Bowen & Zwi, 2005). Currently there is only anecdotal evidence pertaining to use or knowledge of EBDM in the Nova Scotia SAW.

1.6 TOOLS FOR MEASURING CAPACITY FOR EVIDENCE-BASED DECISION-MAKING

Few validated tools have been developed to assess an individual's knowledge of and skill in EBP. Those that do exist have primarily been developed for medical students and graduates (Hatala & Guyatt, 2002). The majority of assessment tools have been self reports and learner satisfaction questionnaires – both of which are limited in their use in assessing EBP competence (Taylor, Reeves, & Ewings, 2000; Green, 1999; Norman & Shannon, 1998). A systematic review appraising instruments for evaluating EBP teaching (Shaneyfelt et al., 2006), identified 104 unique instruments, most of which were administered to medical students and postgraduate trainees. Most existing tools were developed to evaluate the effectiveness of EBP curricula and student/trainee behaviour. The systematic review identified that the majority of instruments predominantly focused on assessing only one skill for applying the principles of EBP (critical appraisal of external evidence). The *Fresno* and *Berlin* assessment tools were the only instruments to evaluate additional skills of the EBP process; with both containing measured psychometric properties, objective measured outcomes and established validity and reliability references for individuals (Shaneyfelt et al., 2006; Ramos, Schafer, & Tracz, 2003; Fritsche, Greenhalgh, Falck-Ytter, Neumayer, & Kunz, 2002).

The *Berlin* assessment tool consists of 15 multiple choice questions, and measures medical professionals' EBP competence (skills and knowledge) (Fritsche et al., 2002). It

was constructed by a panel of EBP experts and validated in a group of medical health professionals attending a course on EBP. The EBP competencies of participants were compared to a 'control' group of medical professionals at the conclusion of the course. The *Berlin* tool was able to reliably distinguish expertise between the two groups. Although the *Berlin* is described as a tool for assessing EBP competence, it effectively only assesses one skill required in the application of EBP principles (critical appraisal of external evidence). It contains no assessment of the other skills needed. Furthermore, it was designed to assess competence in medical doctors and has not validated for assessing competence in other health professions.

The *Fresno* assessment tool also measures medical professionals' EBP competence (Ramos et al., 2003). It consists of two clinical scenarios with open ended questions. Participants are required to complete four steps of EBP process in order to adequately answer the open ended questions relating to the clinical scenarios. The *Fresno* tool has been validated with medical residents. The *Fresno* tool is the only standardized, objective measure of EBP competence currently available, since it measures the participants' knowledge and skill across four key EBP steps. It requires the participant to demonstrate their knowledge, competence, performance and action (Miller, 1990). Although the *Fresno* tool assesses the skills used in applying the principles of EBP, it is limited in its applications as it has only been developed for use in medicine. Therefore, it cannot be used to assess EBP competence in other health disciplines (e.g. nursing, allied health, addictions). Modifications of the original Fresno have retained the open-ended style of questions and complex scoring template of the original test. A subsequent modification of the Fresno, which does not use open-ended questions, was constructed. This new format is quicker to disseminate and easier to score, but was developed for entry level health professional students and was created using a standardized approach (Lewis, Williams, & Olds, 2011).

A number of recent studies have examined the capacity of selected groups of healthcare providers to make evidence-based decisions and have done so using qualitative research methods, in particular, semi-structured interviews (Salls, Dohli, Silverman, & Hansen,

2009; Stephenson, Lewis, & Hays, 2006; Jette et al., 2003). Currently, qualitative study is the only approach for gaining a comprehensive understanding of decision-makers knowledge of the principles of EBP and their application of those principles via the EBDM process. While these methods are effective for providing in-depth perspectives, they also limit the size and scope of potential studies due to the time and resource commitments needed.

1.7 THE NEED FOR EVIDENCE-BASED PRACTICE IN ADDICTIONS

As discussed above EBP emerged from the recognition of the need for a more systematic approach for improving the quality of health care in an era of limited resources (Eisenberg 1997). Today a number of issues continue to drive the need for the continued development of competency in EBP. These include, but are not limited, to:

- 1) Recognition of the fact that significant delays exist between the time when new research knowledge becomes available and its application to care take place (aka the knowledge to action gap) (Glasner-Edwards & Rawson, 2010; Norcross, Koocher, Fala, & Wexler, 2010; McGlynn et al., 2003).

- 2) The fact that while significant advances are being made in our understanding of effective prevention, treatment and diagnosis practices variations in practices within professions exist. Competency in the skills and steps of the EBDM process help practitioners to contribute to the development of standards of practice and practice guidelines (Manuel, Hagedorn, & Finney, 2011; Glasner-Edwards & Rawson, 2010; McGovern, Fox, Xie, & Drake, 2004).

- 3) The proliferation of published studies in recent years has made it extremely difficult to remain up to date. Competency in the skills and steps defined by the EBDM process make such challenges more manageable (Sackett et al., 2000).

Canada's healthcare system must be prepared for constant change if we are to maintain the highest standards of care, to the largest number of people, while minimizing the ever-burgeoning costs associated with such goals (Kothari, Edwards, Hamel, & Judd, 2009).

Within Addiction Services agencies the provision of such care is dependent upon the ability of decision-makers (e.g. Senior Management, Supervisors, Counsellors) to make evidence-based decisions (Bradt, 2009; Canadian Health Services Research Foundation, 2000). For Canada's SAW the standard for decision-making is based upon the philosophy of EBP, which is described in its principles and applied through its defined skills. This is based on the understanding that EBDM, if applied successfully, will lead to the provision of more effective programs, practices and policies, and subsequently improved health outcomes (Jack et al., 2011; CCSA, 2010). Lack of knowledge of the EBDM process, and a failure to apply it in the delivery of addiction prevention and treatment services, may lead to the delivery of suboptimal or even ineffective programs, services, and supports, poor patient outcomes, and cost-ineffectiveness in the provision of programs, services and supports (Glasner-Edwards & Rawson, 2010; Norcross et al., 2010; Marinelli-Casey, Domier, & Rawson, 2002; Goldner, Abbass, Leveretter & Haslam, 2001; Sorensen & Midkiff, 2000).

The significant gap between what evidence has shown to be best practice and what is currently being practiced within the field of addictions, signifies a very real need for improvement. Reasons for the gap have yet to be determined.

1.8 STUDY OBJECTIVES

In order to provide a high standard of care for persons affected by substance abuse, Canada's SAW must possess knowledge of the principles of EBP and the skills for applying those principles. This need is illustrated in Canada's recently developed competency profile for the SAW (CCSA, 2010). While skill and knowledge of EBP are expected from persons in all occupational clusters, the need is particularly defined for persons in Senior Management. The principles and processes through which persons within this occupational cluster make decisions have not been evaluated.

The objectives of the current study are:

- 1) To develop an understanding of the knowledge of the principles of Evidence-Based Practice by Senior Management in Addictions Services in Nova Scotia.

- 2) To develop an understanding of the knowledge and use of the skills needed to apply the principles of Evidence-Based Practice by Senior Management in Addictions Services in Nova Scotia.

CHAPTER 2 STUDY DESIGN

2.1 METHODOLOGICAL ORIENTATION AND THEORY

This study uses the qualitative research approach content analysis (Tong, Sainsbury, & Craig, 2007). Content analysis has been defined as “a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns” (Hsieh & Shannon, 2005, p.1278). Content analysis has been shown to be an effective method for analyzing interview data, and it has been suggested as a promising, effective approach when conducting research with health-related disciplines (Kondracki, Wellman, & Amundson, 2002).

The process of content analysis consists of coding raw data according to a classification scheme, allowing for easy identification, indexing, or retrieval of information relevant to the research question (Hsieh & Shannon, 2005; Kondracki et al., 2002). Once coded, the data are re-organized by code and analyzed for meaning. In this study, the data was analyzed using a sub-type of content analysis known as directed content analysis (Hsieh & Shannon, 2005). This form of content analysis is suggested for use when exploring phenomena for which existing theory or research exists, but is incomplete and would thus benefit from further description (Hsieh & Shannon, 2005). When analyzing data using directed content analysis, a coding scheme is developed in advance, and is then applied to the data. For this study, the coding scheme was developed from the EBP literature. Additional codes were developed using an iterative process as interview transcripts were examined and analyzed. The additional codes were applied retroactively to all previously coded transcripts to ensure the coding scheme was consistent.

Interviewing is the most common method of data collection in qualitative research (Burnard, 2005; Nunkoosing, 2005; Sandelowski, 2002). Interviews may take the form of unstructured, semi-structured, structured, or they may be conducted in a group setting known as a focus group. A semi-structured interview approach was determined to be the most suited for this study. The choice to employ a semi-structured interview in the study

was based on a review of the literature as well as a review of qualitative research studies investigating related topics such as clinical decision-making, and the use of EBP.

We chose to use the semi-structured interview because it uses predetermined questions, but allows the participant the time and scope to talk about their opinions on a particular subject (British Sociological Organization, 2011). Further, a semi-structured interview allows the researcher to explore complex topics of interest by adding novel questions and prompts to the existing set of interview questions as the need arises; the interviewer is not held to the exact questions as appear in the guide. In this study, the researchers had preconceived notions pertaining to the knowledge and use of EBP among Senior Management, and therefore, with the input of relevant stakeholders, phrased the questions in the interview guide in such a way that it was thought most likely to guide the discussion toward the topic of interest.

Evidence-based decision-making is a complex topic, yet it is also driven from a logical point of view. Thus, in this study, where participants had extensive experience with decision-making, it was possible that they were using a model of decision-making very much akin to that of EBP, but that the standard language of EBP would nonetheless remain foreign to them. Therefore, the structure of the interview needed to allow for wide deviations from the original guide to allow the researcher the opportunity to explore participant decision-making processes that may not have been captured in the original questions. The semi-structured interview was the only option that would allow for such deviations. Weaknesses associated with the semi-structured interview include: it is time consuming to conduct; the information obtained can be difficult and time consuming to analyze; and the reliability of the information obtained can be low because the interview guide is not standardized from one participant to the next (British Sociological Organization, 2012). These weaknesses were considered reasonable given the large benefit of flexibility this option presented.

Numerous, recent qualitative studies investigating health professionals attitudes (Lundgren, Amodeo, Cohen, Chassler, & Horowitz, 2011), experiences (Amodeo et al.,

2011), preferences (LaPelle, Luckman, Simpson & Martin, 2006) and needs (Dobbins, Jack, Thomas, & Kothari, 2007) related to EBP have also used semi-structured interviews as a way to gain insightful information into their area of interest. Other possible options included the unstructured interview, the structured interview, and the focus group.

An unstructured interview takes the form of a conversation between the research and participant. The researcher poses an initial question, or makes an initial statement, but the subsequent conversation is guided entirely by the participant's responses (Corbin and Morse, 2003). The aim of this study was to gain understanding of participant's specific knowledge pertaining to a defined and complex subject. Therefore an interview that is participant guided may not provide the desired information, and was therefore an inappropriate choice for use in this study.

A focus group could follow any of the structural formats, but is conducted in a group setting. The group setting can be beneficial when observation or analysis of participant interaction is desired, but it can also introduce a variety of potentially limiting factors, particularly when participants come from the same agency and at are differing levels in the organizational hierarchy; power dynamics and fear of condemnation can become a cause for concern, particularly if the research question is considered sensitive in nature. Given the potentially sensitive nature of the questions involved it was deemed that in a focus group participants may not be candid thereby compromising the validity of the findings.

A structured interview uses a predetermined list of questions, the order and wording of which remain constant from one participant to the next. Structured interviews have a variety of benefits: the invariable presentation of questions provides a high degree of reliability to the data obtained and makes standardizing the interview easy; the structure of the interview makes it quick and easy to create, code, and interpret; and this method can be used to obtain a reliable source of quantitative data (British Sociological Society, 2011). Structured interviews are also an effective means of formative assessment; they can be used to explore how a participant feels about a particular topic before using a

second method to gather more in depth information on a topic. Weaknesses associated with structured interviews include: a limited scope for a respondent to answer questions in any depth or detail; the quality and usefulness of the information obtained is highly dependent on the quality of the questions because additional questions may not be added; and the format of the interview makes it difficult to explore complex issues and opinions, even when open-ended questions are used, the depth of response a participant can provide tends to be more limited than with almost any other method. Evidence-based decision-making is a complex process, and the myriad terminology associated with it makes it difficult to design questions that would definitely elicit from all participants the information needed to address the research objectives. Therefore, the choice of a structured interview was also deemed inappropriate for this study.

2.2 RESEARCH TEAM

The PI of the study has experience with the qualitative interview process, and conducted the interviews for all participants. The PI holds a Bachelor of Science with honours in Psychology and at the time of the study was employed as the Cardiovascular Health Nova Scotia District Coordinator for the Guysborough Antigonish Strait Health Authority (DHA 7). As a research assistant in the Autism Research Centre at the IWK the PI conducted many one-on-one interviews with typically and atypically developing children, and aided in the running of several focus group interviews. As well, the PI conducted and analyzed many one-to-one semi-structured interviews with adults as part of his graduate course work in Advanced Qualitative Research Methods at Dalhousie University. Analysis of the interview data was also conducted by the PI and occurred simultaneously with data collection; a common approach within the realm of qualitative research (Humble, 2009). The two other members of the research team were Dr Robert Gilbert and Ms Jayne MacCarthy: Dr Robert Gilbert has expertise in EBDM having published five peer-reviewed papers on the topic, and works as an applied clinical research scientist in the addictions field; Ms Jayne MacCarthy is employed as one of the four Drug Treatment Funding Program-funded knowledge exchange facilitators for Addiction Services in Nova Scotia.

2.3 DATA COLLECTION

Figure 1 uses a flow diagram to illustrate the research process followed in this study.

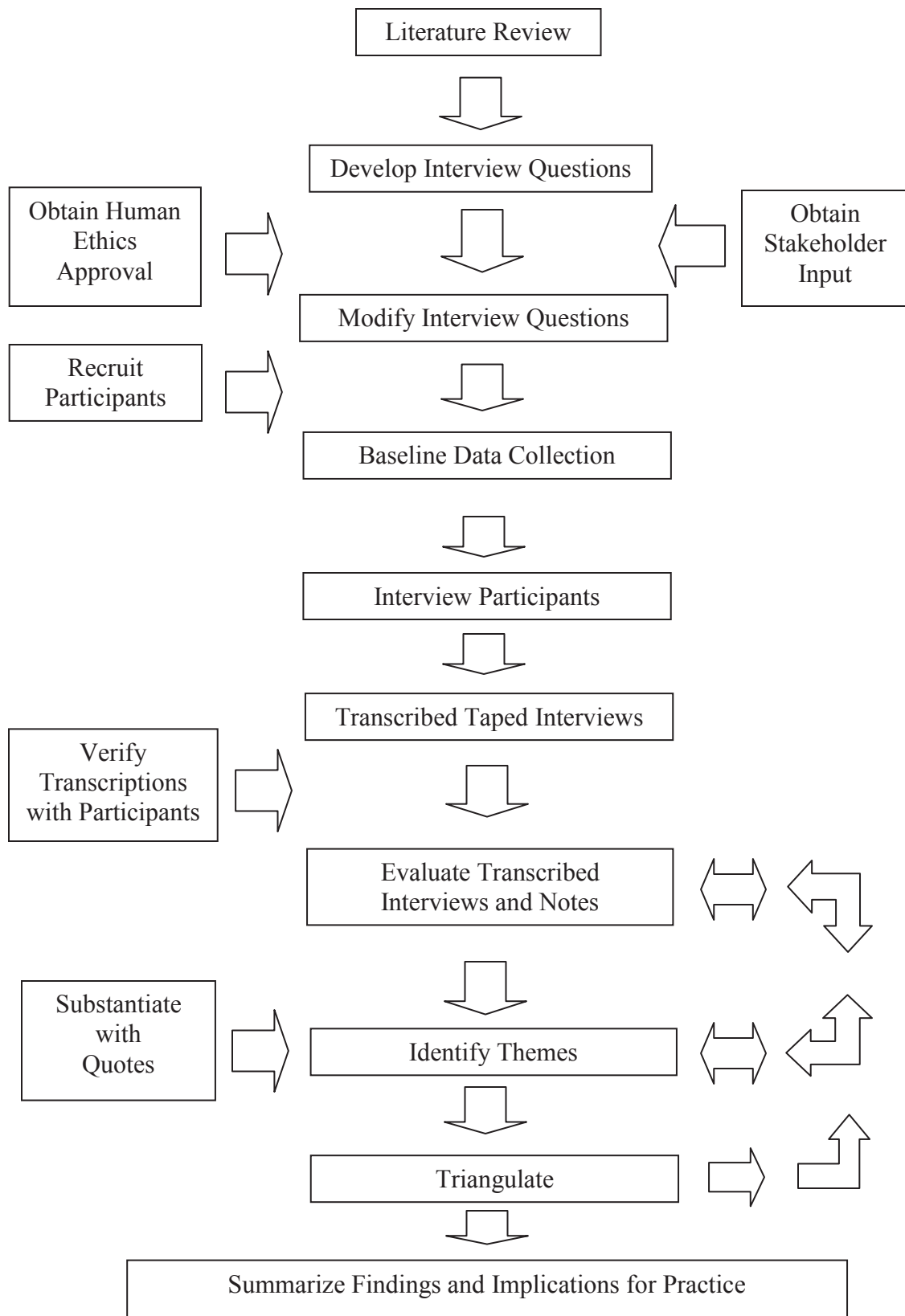


Figure 1 Flow chart of research process

2.3.1 Development of the Interview Guide

The interview guide was developed to assess knowledge of the principles of EBP and knowledge and use of the skills needed to apply those principles (interview questions described in Appendix B). The development of the interview guide was based on a review of the EBP literature (Strauss, Richardson, Glasziou, & Haynes, 2011). Once an initial draft of questions had been created the questions were shared with stakeholders from Addiction Services (three persons with expertise in addictions and experience in training addiction's staff in the EBDM process). These stakeholders were asked to provide comments and suggestions for making the interview questions more generalizable to the Nova Scotian SAW. As a result of stakeholder input the specific wording of questions was altered. In the initial draft of the interview guide questions were posed using language specific to the EBP/EBM literature, following consultations with stakeholders the language was altered to more accurately reflect that which is commonly used in the substance abuse field. For example, in the initial interview guide the term 'gray literature' was included as a potential source of evidence, in the revised guide the term 'gray literature' was removed and replaced with specific examples of sources of gray literature known to be used by the SAW. Furthermore, questions contained in the interview guide were pilot tested with three members of the Nova Scotian SAW. Questions contained within the interview guide were designed to build rapport with the participant such that an opportunity would be created for gaining insight into Senior Management's knowledge and use of:

- 1) Processes for developing focused researchable questions. Including but not limited to:
 - i. Ability to define a problem (need) and identify relevant patient/population.
 - ii. Ability to identify and distinguish different types of interventions (prognostic diagnostic, preventative and treatment).
 - iii. Ability to identify an appropriate comparator.
 - iv. Ability to define outcomes appropriate to the problem and context.

- 2) Search strategies for finding knowledge relevant to the focused researchable questions. Including but not limited to:
 - i. Ability to identify and find all relevant types of information (external and internal), and their sources.
 - a) Ability to perform a systematic literature search.
 - b) Appropriate use of controlled vocabulary.
 - iii. Ability to identify and gather relevant expert opinion (experience).
 - iv. Ability to identify and gather information relevant to the context within which decisions are being made (e.g., client's experiences and judgment).
- 3) Critical appraisal methods for determining validity of knowledge found. Including but not limited to:
 - i. Ability to evaluate experience.
 - ii. Ability to appraise the validity of research studies (primary or secondary) and to recognize their place in the "Hierarchy of Evidence".
 - iii. Ability to appraise the applicability of knowledge to the context within which a decision is required.
- 4) Processes for integrating internal and external evidence from various sources. Including but not limited to:
 - i. Ability to make relevant recommendations in the presence of conflicting evidence.
- 5) Evaluation methods for assessing outcomes of applied decisions.

2.3.2 Participant Selection

Participants in this study were recruited using a purposeful method from Addiction Services in the province of Nova Scotia. In 2010, the CCSA published a guide of competencies and associated expectations of proficiency by occupational cluster for individuals employed in the Canadian SAW. Participants were approached if they held a position with a job description that matched the descriptions and expectations provided in

the occupational cluster for Senior Management described in the Behavioural Competencies for the Canadian Addictions Workforce document (CCSA, 2010). Associated Addiction Services' job titles within Nova Scotia that align with the CCSA (2010) descriptions and expectations include: manager, administrative director, clinical director, and vice president. Table 3 provides the responsibilities of the Senior Management occupational cluster as defined by CCSA.

Table 3 *Role description for the occupational cluster Senior Management*

<p>Senior Management: Persons responsible for providing directions in all aspects of the agency's functioning and all services it provides. Provides leadership in the development and implementation of strategic and operational plans; manages finances, HR strategy and public relations. Example job titles: Executive Director, Clinical Director, Program Director, Program Manager, Controller, Office Manager</p>

The participant pool was identified by matching the role description (definition) for the occupational cluster Senior Management, with the role descriptions of people working in Addiction Services agencies in Nova Scotia. This was accomplished through consultation with senior leadership in the provinces' Addiction Services agencies who identified individuals matching the role descriptions for the occupational cluster Senior Management. A total of 47 people were identified. Based on qualitative studies which explored the processes of research use by decision-makers across different health fields (Jack, Brooks, Furgal, & Dobbins, 2010; Jack, Dobbins, Tonmyr, Dudding, Brooks, & Kennedy, 2010), we determined that recruiting 20 participants would exceed our need to reach data saturation, the point at which no new data would emerge. Selection of potential participants to this study was based on proximity to the PI, within a 200km radius. Once the list of potential participants was compiled, a letter of information was sent to the Directors of Addiction Services in those DHAs where interviews would be conducted. The letter identified the researcher and the nature of the research. The letter also provided the date and file number of the Research Ethics Board (REB) approval of the project. An initial email was sent to potential participants, this email was similar to the letter sent to the Directors: it identified the researcher, the nature of the project, and

requested permission to contact the participant by telephone to provide a more thorough explanation of the project and inquire about participation.

Individuals agreeing to further contact were telephoned by the PI (Matthew Murphy). During this call participants were asked if they were interested in participating, if a positive indication was provided, a meeting was arranged between the potential participant and the PI. At this meeting participants were given the opportunity to ask questions and provide written informed consent. During this meeting a second meeting was arranged during which the interview was conducted.

As described in Chapter 1, in Addiction Services in Nova Scotia, decisions pertaining to policy, programming, services, and support are the ultimate responsibility of Senior Management and they therefore require high levels of proficiency in many competencies requiring knowledge and skill in EBP.

Work Environment of Study Participants

Within Nova Scotia the DHW is responsible for recommending provincial directions in addiction treatment and prevention, establishing and monitoring provincial system standards for addiction services, monitoring the quality of prevention and treatment services across the system, and maintaining alcohol, other drug use, and gambling monitoring and surveillance. The provincial department works to ensure that there is provincial coordination regarding addiction prevention and treatment issues and to support knowledge development and exchange opportunities throughout the province. As a result of provincial oversight and coordination, work environments within DHAs are similar to one another, and the job descriptions and responsibilities of persons in the same occupational clusters are similar.

Addiction Services in the Nova Scotia share a common organizational structure. Within each DHA, Addiction Services are overseen by one Vice President (the Vice President oversees many programs of which Addiction Services is one) to whom the Director of Addiction Services reports. Directors are responsible for overseeing the responsibilities

of managers. Managers in turn are responsible for overseeing the responsibilities of staff including: Supervision; Support and Outreach; Counselling, as well as Administrative Support. The number of staff a given manager is responsible for ultimately depends on the number of services he or she oversees.

2.3.3 Setting and Process for Data Collection

Interviews were conducted in the office of the participant, or via telephone. Travelling to the participant and allowing the interviews to take place in his/her own office has been shown to increase the comfort of the participant and reduce any perceived power imbalances between the participant and researcher (Tong et al., 2007), although in the case of student lead research such as this, a perceived imbalance is unlikely. Participation in the study consisted of participation in the one-on-one semi-structured interview.

Permission to digitally record the interviews was included in the consent process; individuals were informed that if they chose to not allow the recording of the interview that their participation needed to be terminated as the recording was necessary for later transcription and analysis. In addition to the digital recordings, a log of interview field notes was maintained for each participant interview. This log was then used during the analysis of interview data to help contextualize individual responses.

After each interview was conducted it was transcribed verbatim by the PI; all personally identifying information was removed from the transcripts during this process to help protect the confidentiality and anonymity of participants. Once the transcript was prepared it was returned to the participant to provide the opportunity to edit, clarify, elaborate, or revise as needed. The goal of this form of member checking is to determine if the data is congruent with the experiences of the participant thereby increasing the validity of the data obtained (Carlson, 2010). As with many studies that include participant interviews, permission to use individual quotations to support conclusions was sought.

2.4 DATA ANALYSIS

The interview data was analyzed using directed content analysis (Hsieh & Shannon, 2005). Using the themes and language of EBP, an initial list of codes was developed and applied to each transcript. As analysis proceeded additional codes were developed and applied as necessary; previously coded transcripts were then reviewed to see if the newly developed codes were applicable. Coding was initially conducted by hand, on a line-by-line basis, assigning a single code to each line. Where appropriate, more than one code was assigned to an individual line. After the initial hand coding was completed, the transcripts were coded on a line-by-line basis using NVivo 9.0 Software (QSR International, California). The initial hand-coding process increased familiarity with the data and was compared (triangulated) with the results of the NVIVO coding to increase the validity of the coding process (Morse, Barrett, Mayan, Olson, & Spiers, 2002). Once coding of all transcripts was complete, the codes were collapsed into broader categories and subsequently into even broader themes.

As suggested by Sandelowski (2001) the qualitative data are reinforced by quantitative counts of the participants discussing specific themes. Table 4 lists the thematic response frequency (percentage) and the associated written descriptors.

Table 4 *Percentage values for terms used to describe thematic response frequency*

Term	Thematic Response Frequency (percentage)
Few	Discussed by less than 25%
Some	Discussed by 25 – 50%
Frequently	Discussed by 50 – 75% of participants
Majority	Discussed by greater than 75%

A variety of techniques and procedures exist that can be used to increase the validity of the data in qualitative inquiry (Carlson, 2010; Morse et al., 2002). The current study employed: reflexivity; the use of an audit trail; the use of member checking; and triangulation (Carlson, 2010).

Reflexivity in qualitative research is the process of recognizing and explicitly stating one's own "personal biases, assumptions, and aspects their background that could influence the decisions they make" (Carlson, 2010, p1104). Reflexivity can be accomplished in many ways including maintaining a journal of thoughts, feelings, uncertainties, or any other issues that the researcher feels could ultimately influence the results of the study. From the beginning of the study it was noted that the research team had a preconception of the participant's level of knowledge and use of the EBDM process; the assumption was that the Addiction Services workforce was not familiar with, or using the EBDM process in their decision-making.

An audit trail refers to the careful documentation of all components of the study (Carlson, 2010); it may consist of field notes kept during interviews, journals, records, and various drafts of interpretations (Carlson, 2010). Maintaining audio recordings for a set length of time is also considered part of an audit trail. For this study, memoing (the process of recording thought processes and dates) was maintained for all components of the study. This included, but was not limited to: decisions concerning the development of the interview guide, the coding scheme, and application of the codes to transcripts. Field notes were recorded for each interview and kept as part of the participant file. Drafts for each stage of the thematic analysis were maintained so that the progression, or evolution, of the analyses could be reflected upon. As well, field notes plus audio recording will be kept in a secure location for a period of seven years after the completion of the study.

Member checking is a procedure whereby participants are afforded the opportunity to check particular aspects of the interpretation of the data they have provided (Carlson, 2010). Member checking can take various forms in qualitative research, but most commonly it consists of providing transcripts or particles from the narratives to participants to edit or revise (Carlson, 2010). In this study, participants were asked to review their own transcript and elaborate, clarify or otherwise edit their responses after the initial transcription was completed.

Triangulation may be used in gathering and/or analyzing data (Carlson, 2010). In this study, triangulation was used in the data analysis phase rather than the data gathering phase. Data in this study was analyzed independently by both the PI and another member of the research team (Jayne MacCarthy). To assure consistency in code assignment, a test of inter-coder reliability (between the two research team members) was performed using a sample of text from each of the interview transcripts to ensure that the coders were interpreting the data and assigning codes in a similar manner. In the event of a disagreement or confusion, the two team members discussed the text in light of the overall question response and came to a consensus. Independent thematic analyses were also compared between the two team members. Any differences were discussed between the two team members and consensus was achieved.

CHAPTER 3 RESULTS

3.1 PARTICIPANT CHARACTERISTICS

Data for this study was collected between October 2011 and February 2012. Ethics approval for the study was obtained from Dalhousie University REB (project# 2011-2447). This project was developed in collaboration with members of the Quality and Research Utilization Division (QRUD), Addiction Services, Pictou County Health Authority. A submission was therefore made to the Colchester East Hants Health Authority REB, on behalf of the QRUD (project# 1109).

A purposeful sample of 20 Senior Management personnel employed by Addiction Services agencies in Nova Scotia were invited to participate in this study. Eighteen participants completed the semi-structured qualitative interview. Two persons declined participation: one did not show for the initial meeting and ceased communication thereafter; a second participant agreed to the initial meeting, but subsequently decided against participating citing redundancy due to the participation of other individuals from the same agency. This sample of participants was representative of Addiction Services agencies which collectively provide care to approximately 57% of the provincial population (Statistics Canada, 2011). All participants were approached and agreed to the initial telephone conversation. During this conversation a meeting was arranged between the participant and the researcher so that the consent form could be signed and a date could be set to conduct the interview. All of the participants worked in urban or semi-urban areas, yet served clients who lived in urban, semi-urban, or rural areas.

As described in Table 5, participants had an average (mean) of 16.5 years experience in Senior Management (range of 32 years, Min = 3, Max = 35) and held a variety of university degrees: social work, nursing, clinical psychology, medicine, business administration, pharmacology, and community health and health promotion. Most participants held a master's degree, one held a doctorate in clinical psychology, one held a doctor of medicine degree, and four held bachelor's degrees. It is uncertain if this education background and number of years of experience for this sample is representative

of other Senior Management in Addiction Services in the province of Nova Scotia. Four participants indicated that they had taken part in a two day workshop on EBDM, 11 participants had received training through their library services department to aid in basic literature search strategies (i.e., how to use electronic databases, how to use Medical Subject Headings (MeSH), etc).

Table 5 *Demographics of participants in this study*

Senior Management (n = 18*)	
Gender	
Female	n = 8
Male	n = 10
Highest Level of Education Obtained	
Bachelors	n = 4
Masters	n = 12
PhD	n = 1
Medical Doctorate	n = 1
Background Education **	
Nursing	n = 2
Social Work	n = 6
Clinical Psychology	n = 5
Business Admin.	n = 2
Pharmacology	n = 1
Community Health	n = 1
Medicine	n = 1
Health Administration	n = 1
Nurse Practitioner	n = 1
Mean years in Senior Management	\bar{x} = 16.5 range = 3–35 years
*Although one individual's job title within the DHA was that of clinical supervisor, their role within the DHA matched that of the role description for the Occupational Cluster Senior Management.	
**One participant held both a masters of nursing as well as a nurse practitioner diploma; one participant held masters degrees in both business administration and pharmacology; this information is included twice.	

3.2 INTERVIEW RESULTS

Semi-structured qualitative interviews were conducted with 18 members of Senior Management from Addiction Services in Nova Scotia. Data saturation in this study, the point at which no new information was being collected, occurred during the thirteenth and fourteenth participant interviews. To guarantee that saturation had occurred, the remaining four participant interviews were conducted. These interviews helped to substantiate previously identified themes, but did not contribute to the identification of new themes.

The majority of the interviews were conducted in person at the participant's office; three were conducted via telephone, to accommodate for time constraints. Interviews were conducted on a one-to-one basis with no observers present, and lasted an average of 60 minutes. Field notes were maintained for each interview and were reviewed during the transcription process and memoing was performed throughout each stage of the research. Permission to audio record interviews was obtained from all participants. The audio recordings were used to create verbatim transcripts of the interviews; following the creation of the transcripts participants were asked to review their transcript to ensure accuracy of the interview. At this point participants were asked to correct any mistakes and include any information they may have omitted. All participants responded and aside from the correction of grammatical errors no revisions were made to the content of the transcripts. Following the participant revision stage, the transcripts were analyzed using directed content analysis. All participants agreed to the use of personal quotations in the writing of the final report.

The interview guide was developed to assess understanding of the principles of EBP and their application by Senior Management. The development of the interview guide was based on a review of the literature and focused on principles of EBP, as well as the skills required for the application of the principles (Strauss et al., 2011). In the context of this study EBP is defined as the formalized process of using skills for comprehensively identifying, searching for and interpreting the results of the best scientific evidence, which is considered in conjunction with relevant expertise (experience and judgment), the

client's preferences and values, and the context in which the decision is made. Evidence-based practice is based on the principles that scientific evidence alone is never sufficient to guide decision-making, and that among available types of evidence a hierarchy exists. When applying the principles of EBP, a series of skills, defined in the EBDM process, are employed. These include: 1) Developing a focused researchable question; 2) Developing and applying a search strategy to gather evidence; 3) Critically appraising evidence; 4) Integrating internal and external evidence; and 5) Evaluating the outcome of the decision to identify areas for improvement.

3.2.1 Themes

Analysis of the participant's interviews revealed four major themes: 1) Senior Management believe Addiction Services in Nova Scotia to be evidence-based in its provision of programs, services and supports to its clients; 2) Decisions are made through consensus; 3) Senior Management possess an understanding of the principles of EBP; and 4) The skills needed to apply the principles of EBP may require development in Senior Management. Figure 2 presents the four major themes, as well as their associated minor themes.

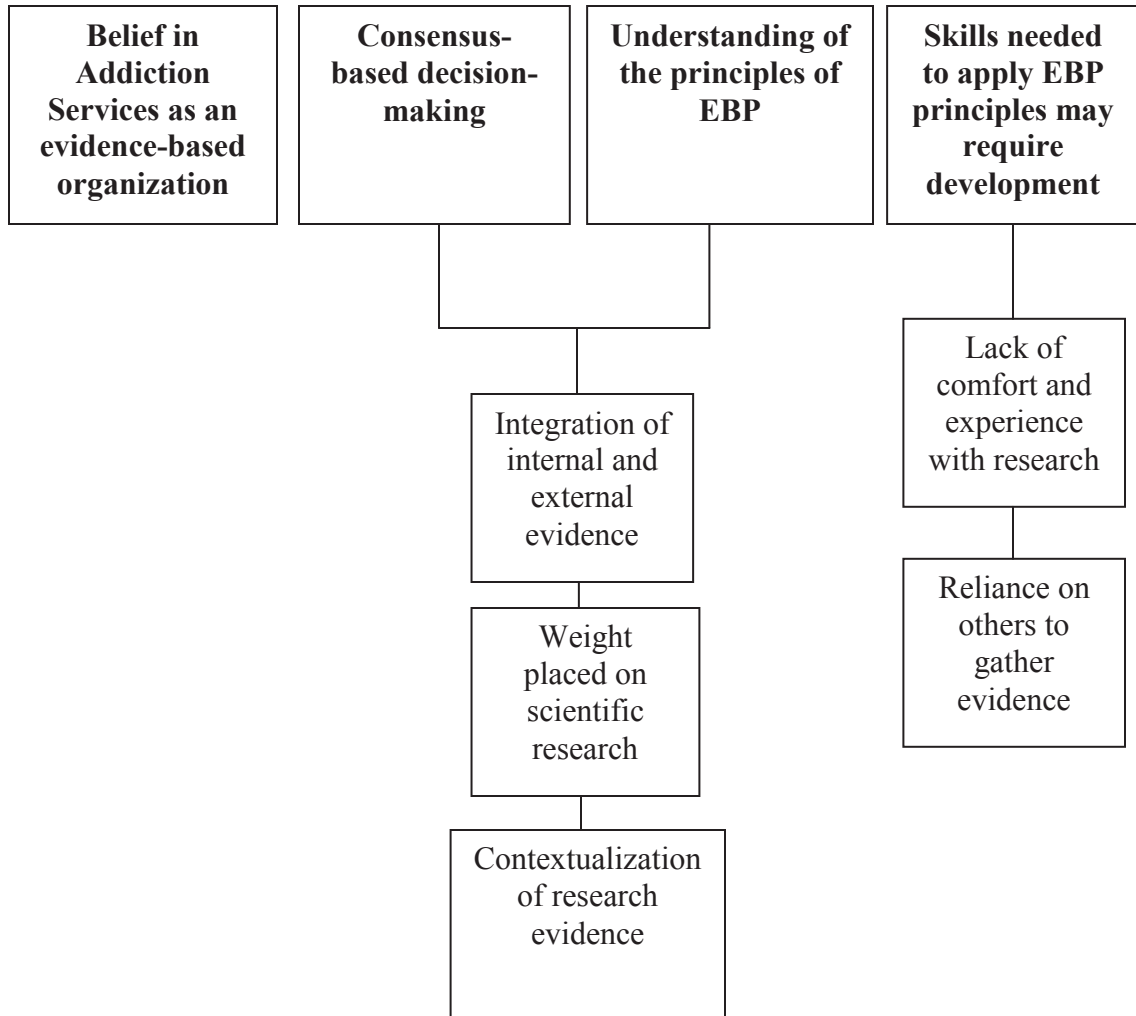


Figure 2 Flowchart of themes based on directed-content analysis

3.2.2 Belief in the Provision of Evidence-Based Services, Supports and Programs

There is a belief among Senior Management that Addiction Services in Nova Scotia provides evidence-based programs, services and supports.

The majority of Senior Management described their agency as evidence-based. As one participant stated (S16):

[...] we're running an evidence-driven, evidence-informed program, we pride ourselves on research, it is one of our big selling points, we use evidence where others don't, I'm big on "show me how you use it, and prove that you maintain it".

Another participant referenced the use of evidence in their ability to defend decisions or actions to the public (S6):

... because we have done such good work on the research and evidence we are able to explain to people in the community why we are doing things, why something is important, what the issues are, and can back it up with the research and the evidence.

Similarly, another participant discussed the need to be able to defend one's recommendations pertaining to decisions to others within the agency (S13):

We have done a lot of work in this district and with a number of programs, so it is fairly common to say "ok where did you come up with your evidence for making this recommendation? What is it based on?" So it's not a flavour of the week, you really have to do your homework.

In contrast, a few participants believed Addiction Services to not be evidence-based. According to one participant said "everyone talks a really good game around evidence-informed, evidence-based, evidence-this evidence-that, but in practicality I don't think we have really hit a place where we really do something meaningful with it" (S8).

All participants, regardless of their point of view on whether the agency was evidence-based, described decisions as being reached through consensus.

3.2.3 Consensus-Based Decision-Making

Decisions are made by using a consensus process e.g., they gather together their experiences and knowledge and then come to decision through consensus.

Decision-making as described by the majority of Senior Management was reached through consensus. Participants frequently made reference to bringing needs to one

‘table’ or another, where decisions are made through consensus. According to one participant (S3):

[t]here is an effort to come to some sort of consensus regarding the decision-making because it is a group process. So there is discussion trying to move folks to that direction, if consensus isn’t achieved then the decision will be put to a vote...

Similarly, another participant stated “[w]ell I sit on a number of decision-making bodies around [treatment X] and we do have processes and our goal is consensus” (S14).

Arriving at decisions through consensus is compatible with the process of EBDM, provided the principles of EBP are reflected in the decision-making process and applied comprehensively through the use of the defined skills.

3.2.4 Understanding of the Principles of Evidence-Based Practice

Senior Management demonstrated an understanding of the principles of EBP in their approach to decision-making.

Evidence-based practice is based on two principles: 1) The recognition that scientific evidence alone is insufficient to guide decision making; and 2) Within available sources of evidence a hierarchy exists. The majority of participants demonstrated an understanding of both principles of EBP. The recognition that scientific evidence alone is insufficient to guide a decision is exemplified by one participant who stated (S6):

[...] so research based randomized clinical trials, meta-analyses, Cochrane Reviews, and we try to temper that with the other fields of knowledge, so what are the folks who are actually doing the work saying? What’s the customer base saying?

Another participant expressed awareness of this principle in discussing the integration of various forms of evidence (S5):

[Researcher A] and colleagues did a literature review and there was no evidence that it had these great outcomes; staff see them, and clients see

them, [...] So I still see value in that, but how I deal with that is, we have discussed it many times as a management group and our decision as a management group is now that acupuncture will be taken away [...] I'm comfortable with that because I think that that piece of "yes, but people really value it" was involved in the decision-making.

Another participant also expressed awareness of this principle when discussing a service change. According to this participant, input for the decision came "not just from the literature but also from staff and from some of our potential clients" (S10). Another participant described the sources of evidence that would be used to guide a decision (S2):

In terms of the clinical practice end of things it would be published literature, new best practices documents or summaries of best practice and evidence that is coming out [...] and also looking very much at the data that we have in house, and looking at that in terms of who are we seeing, how are we seeing them in terms of clients and case loads, and that's a piece of evidence as well.

Recognition of the hierarchy of evidence is present in the following excerpt from one participant discussing the need to gather high quality evidence (S10):

[our manager of research] has done a lot to actually help us learn that when you say 'evidence' it's not a Google search, it's something from the Cochrane Database or it's CINAHL, or somewhere a little more reliable when we are actually searching for the evidence.

Awareness of the evidentiary hierarchy is also apparent in the following participant statement discussing the need for evidence to guide decision making "I need the literature to tell me, and in the absence of literature I base it on experts, discussion, conversation, what makes sense, and I go from there" (S1).

While knowledge or awareness of the principles of EBP is important, the comprehensive application of the principles is dependent upon competency in the skill set defined within the EBDM process. Given that Senior Management possess an understanding of the two principles of EBP, the question remains whether sufficient competency in the skills required to apply those principles exists. The five skills needed to apply the principles of

EBP are: 1) Developing a focused researchable question; 2) Developing and applying a comprehensive search strategy to gather evidence; 3) Critically appraising evidence; 4) Integrating internal and external evidence; and 5) Evaluating the outcome of the decision to identify areas for improvement.

3.2.5 Skills for the Comprehensive Application of the Principles of Evidence-Based Practice

The skills required for the comprehensive application of the principles of EBP require development in Senior Management.

Development of a focused researchable question

Participants were asked to describe the process they use to identify a problem, or ensure that when a question is posed, it is in fact the right question. Participants struggled to provide a response to this question. The majority of participants stated that at least initially, they were unsure if the question being posed was in fact the right one and that over time the question either changed or became more refined. According to one participant “in a lot of cases you just don’t know if you are asking the right question. For myself, generally something comes to mind that I am wondering about and then I start exploring it” (S7). Another participant explained that “I think the questions evolve, I don’t think you start with a perfect question, but that they evolve as you get more and more information available to you” (S2). Of the 18 participants, one discussed a formal process for defining a research question, yet this participant did not identify all of the components of a process like PICO (S11):

So the formal process of coming up with your research question, we have done a bit of that work as well, we did a two day seminar in the Valley as well on how to construct a research question and breaking down what you are actually looking for. Rather than just going into the literature and letting the evidence direct your question, creating the question first and then finding the evidence to support what you are actually asking.

Some participants discussed the need to consider an outcome when developing a question. For example one participant stated (S2) “I’m thinking of acupuncture, and I

don't know if I am going to get at this or not but the question for acupuncture is "is it effective, does it have good outcomes?" Another stated "obviously you are thinking of an outcome, so I would think 'this is what I want for my outcome, what do I need to ask, and do, and go through to come up with my question to reach this point?'"(S8)

Search strategies for gathering evidence

Participants were asked to describe strategies they used to gather evidence, including the sources they might access. Some participants discussed using bibliographic databases (i.e., Pubmed and Cochrane) as a source of scientific research literature, though participants frequently indicated they did not use systematic reviews. The majority of participants identified expert opinion as a source of evidence. The majority also indicated that existing policy from other jurisdictions was considered an excellent source. The participants were not asked if they used a process to determine if other jurisdiction's policies were created using an evidence-based approach. The majority of participants failed identify their own experience as a source of evidence; a minority did not identify the preferences and values of their patient's/population' as sources of evidence.

In terms of gathering evidence to answer questions or address issues, the majority of participants stated that they did not gather evidence themselves; rather they had staff members perform the work for them. The majority of participants cited time as one of the reasons that they did not perform their own searches; two participants also added that they also were not comfortable with their own skills to perform such a search. One participant described the difficulty encountered with trying to track down the full text version of an article, rather than simply using the abstract (S10):

I find it difficult because I have never gone beyond, that's my personal experience. And there's something, because I did, I emailed the librarian to ask if she could help me get [this article] because I couldn't seem to pull it out at all, and she sent me something back and still I couldn't get it.

Some participants stated that they had people in positions (research and statistical officers (RSO), decision support) to do such things and they trusted that they were experts in that area. According to one participant (S12):

[...] we have our decision support person. So we put people in place whose job is to have that expertise, so we would ask them to give us the advice, or well the literature, the evidence, and then we determine from the evidence what will be our approach.

Critical appraisal of external evidence

When participants were asked how they would evaluate the validity of knowledge collected as part of their decision-making process, responses varied. Some participants stated that they would look to see if the information came from a recognized source such as the Centre for Addiction and Mental Health (CAMH) or a well known journal. Some participants stated that they were not comfortable performing such an evaluation and would rely on the expertise of someone else from within their agency such as an RSO or someone in a decision support role. This is exemplified by one participant who stated “I’m not that good at that [...] I would go to [our RSO]” (S14). Some participants stated that the first place they would begin evaluating information for validity would be the research methods used in a study. According to one participant “the first thing I always look at is the research methodology piece. So what have they done? What is the validity on this? If it is survey research, what are the confidence intervals? What’s the response rate?” (S3)

Few participants discussed the need to evaluate the specific statistical tests that were employed in a study, though one commented that they did not have the requisite skills to do so “I have taken some statistics courses before but I am certainly not capable of comparing specific statistical analyses against one-another” (S9).

Integration of internal and external evidence

Participants were asked to describe how they applied the results of their searches to their decision making process. The majority of participants described the consideration of both

internal and external evidence when making a decision. According to one participant prior to deciding to implement a new program (S4):

[...] I would want to read the research on it, have a look at the outcomes, and I'd want to compare where and who it was implemented with to see if it is compatible with our area and our resources. I'd probably talk to someone who has done the program in another place, make a phone call, talk to staff about it get their views because they are great at finding stuff that I wouldn't even think about[...].

When discussing the integration of internal and external evidence participants frequently emphasized the weight placed on scientific research to support decisions. This was particularly apparent when discussing the decision to remove acupuncture as major treatment modality. According to one participant (S5):

I'm thinking of an example where we looked at something to see if there was evidence behind it, and it was acupuncture within an inpatient setting, and in that instance we met with several staff, we had one of our key managers [...] do a literature review, and very little was found, we then had a debate between proponents and opponents to that, and at the end of the day we came to agree that there really wasn't any evidence behind acupuncture.

A few participants identified the need to garner input from relevant high quality literature, expert opinion, clients, and staff, and one of the two also identified the need also consider previous experiences (S17) "So when I can say 'OK, this is what the literature says about this; this is what the experts say about this; this is what I read in this or that book; this is what our past experiences with this have been.'"

The majority of Senior Management also discussed the need to adapt evidence so that it could be applied to their local context. Financial and resource limitations were cited by the majority of participant as significant contextualizing factors. According to one participant (S16):

The one that immediately jumps in to my head is that there are budgetary constraints and so you may find the best program that you have ever seen and it is research-based and it has an evidence-base, it's the gold standard in terms of whatever area you are looking at, but it's far too costly for the hospital or for the department to deliver.

This message was repeated by another participant “sometimes it is difficult to translate the best practice to create on the operational side of things simply because you may not always have the resources or capabilities to fully meet the standard that the best practice is setting” (S10).

A few participants also discussed the need evaluate the information in light of their own clinical context. According to one participant (S16):

We try to rely on meta-analyses as much as possible [...] and we rely on things like the Cochrane Collaboration, so you look at the source [...]. You try to look at the quality of the study in terms of the methods and whether there were potential concerns in how they conducted the study and then also looking at how it relates to what we are doing.

Once evidence has been integrated, contextualized and applied to a decision, an evaluation of that decision must be made to discover areas for future improvement.

Evaluation Outcomes of Applied Decisions

When asked what methods participants would use to assess the outcome of applied decisions the majority of the participants stated that they should measure treatment and prevention outcomes. Some of the participants stated that these outcomes should be determined in advance to avoid a biased evaluation. Frequently participants stated that while that is the process that should take place, it is not the process that currently takes place. Rather, the majority of participants stated that evaluation is most often based on client satisfaction. These statements are exemplified by one participant (S16):

So I think before you implement something, you need to sit down and say “OK, what do we think this is going to do? What do we want this to do? And then come up with the way in which it will be measured, and have some sort of performance indicators or outcome measures that you can

measure pre and post, if not during, so that you are actually collecting the data that tells you whether or not you are doing what you want to be doing. What we tend to do now is to not do that at all, and we implement a program, and then we get feedback from the people who liked it, and continued to participate in it, so then we come to the conclusion that “wow this is really popular, it’s effective.”

Another participant when discussing outcome monitoring stated “I don’t think we do it and I don’t think we have in past either to see if programs are meeting outcomes” (S9).

CHAPTER 4 DISCUSSION

4.1 SENIOR MANAGEMENT AND DECISION MAKING

Eighteen members of the Senior Management occupational cluster (CCSA, 2010) from Addiction Services agencies in Nova Scotia participated in this study. As described above, the objective was to appraise their understanding of EBP principles, and knowledge and use of the skills needed for applying those principles. Evidence-based practice is based on two principles: 1) Scientific evidence alone is insufficient to guide decisions, and 2) Within available source a hierarchy exists. The comprehensive application of the principles is dependent upon competency in the skill set defined by the EBDM process. Within the context of this thesis, EBP is defined as the formalized process of using skills comprehensively for identifying, searching for and interpreting the results of the best scientific evidence, which is considered in conjunction with relevant expertise (experience and judgment), the client's preferences and values, and the context in which the decision is made.

Senior Management in Addiction Services in the province of Nova Scotia were clear in their belief that their organization provides evidence-based programs, services and supports. Decisions pertaining to the provision of programs services and supports are arrived at through consensus, and the principles of EBP were shown to be inherent in this process. Whether decisions made through the current process should be regarded as evidence-based is less clear. This reflects the fact that Senior Management were not able to demonstrate the skills needed to apply the principles in a comprehensive manner.

4.1.1 Processes for Developing Focused Researchable Questions

To ensure that all best available evidence is identified, a focused researchable question must be formulated; it is this question that will guide the subsequent search for information. In the absence of clear and focused question, the researcher runs the risk of: 1) Becoming overwhelmed with voluminous and irrelevant information; 2) Missing relevant important information to the decision; and 3) Selecting interventions that will not result in the desired outcomes and therefore potentially cause harm.

There are many valid approaches to formulating a question, and all share common characteristics. One widely recognizable method, the PICO (Population/Patient/Problem, Intervention, Comparison, Outcomes) process, directs the individuals in the identification of the population of interest; the intervention that will be investigated, a comparison group/intervention if applicable, and finally, the desired outcomes (Sackett et al., 2000). Within the field of addiction services the population/patient/problem could range from an individual in opiate treatment to an entire segment of the population (i.e., youth who use tobacco); an intervention could be anything from a pharmacological tool such as methadone to a preventative health promotion initiative; the comparison could be any number of control groups, usually the gold standard; and the outcome obviously varies depending on the question, but in general terms it is as the name implies: the specific effect one hopes to achieve. By clearly identifying various components of the question, the decision-maker gains a more comprehensive knowledge of the need, thereby providing direction in their subsequent search for information. Although each component of the PICO process is important, clearly defining ones population/problem and desired outcomes are especially important. Further, in addition to identifying the desired outcomes, specific measures must be selected in advance that will be used to determine if the outcomes have been met. Whether an individual uses PICO or another approach does not matter, so long as the individual uses *a* process, and that the process results in a question that is clear, answerable, and contains defined parameters.

In this study participants were given the opportunity to describe the processes they use when formulating questions. A consistent process was not demonstrated. Of the 18 participants, 11 did not identify or fully articulate, any of the components described in approaches like PICO. Of the minority who did discuss one or more of the steps in formulating a PICO question, the focus was on selecting an intervention without discussion of the relevant populations, desired outcomes, or associated measurements. The need to identify measures for the desired outcomes is particularly important in the field of addictions, where a measure of success is subjective, and could include but it not limited to: harm reduction, or complete abstinence. This lack of discussion concerning relevant populations and outcomes speaks to a lack of application of appropriate process.

All of the participants in the study have as a minimum a bachelor's degree, and as such have been trained in competencies pertaining to critical thinking. One possible explanation for this finding is that in clinical settings like Addiction Services, the emphasis on evaluation has long been overlooked in favour of service delivery (Kothari & Armstrong, 2011).

4.1.2 Developing and Applying Search Strategies

When using the steps defined by EBDM process, once a focused researchable question has been formulated, search strategies can be developed to guide the investigator in the search for information from all relevant sources including, but not limited to: scientific research; grey literature; expert opinion; and knowledge of the context in which the decision will be made (including patient preferences and values). Being able to find all relevant information is important. In the absence of a comprehensive search, the decision-maker runs the risk of missing important information to the decision-making process, this may result in the development of sub-optimal, or harmful treatment.

In this study an opportunity was provided to discuss search strategies employed when gathering information to answer questions. No participant identified all of the potentially relevant sources. The majority of participants discussed the need to draw information from scientific journals and gray literature. Five participants mentioned using bibliographic databases i.e., Pubmed and Cochrane, as a source of scientific research literature. Eight participants indicated they did not use systematic reviews. Use of expert opinion was a common theme in participants' responses as was the reliance on existing policy from other jurisdictions. The participants were not asked if they used a process to determine if other jurisdiction's policies were created using an evidence-based approach. The majority of participants did not identify their own experience; a minority did not identify the preferences and values of their patient's/population' as sources of evidence.

This study describes the knowledge of a predominantly master's trained workforce, therefore one would expect recognition of the need to include all types and sources of

evidence when describing their approach to decision-making (see figure 3 for a Venn diagram of the sources of information used in the EBDM process)

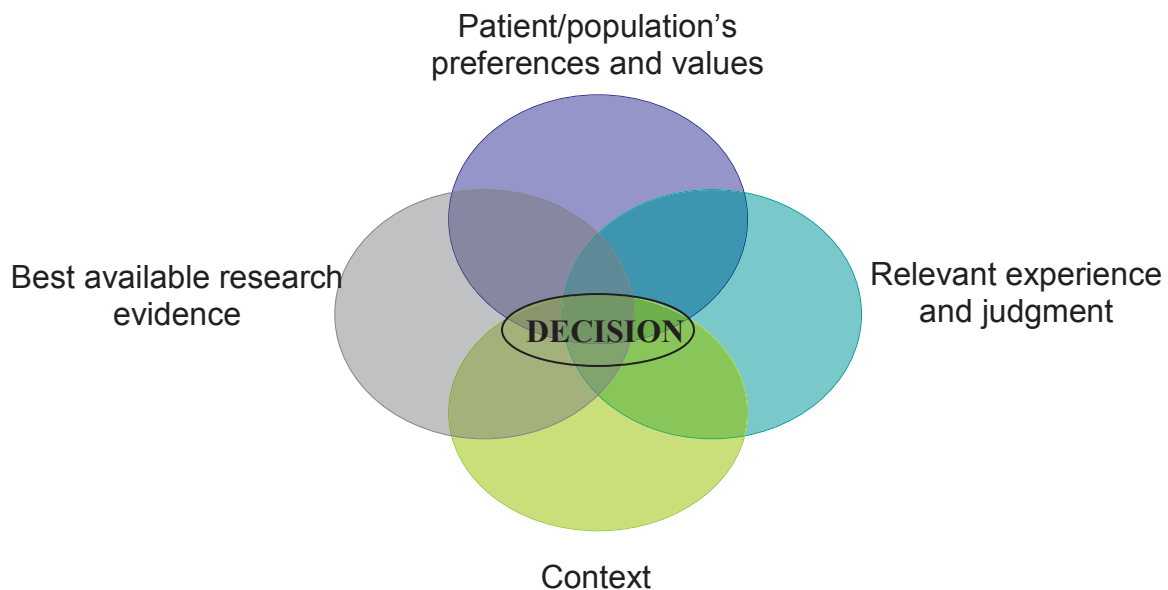


Figure 3 Sources of information used in the EBDM process

In terms of gathering evidence to answer questions or address issues, the majority of participants stated that they did not gather evidence themselves; rather they had staff members perform the work for them. Implications of this are discussed in section 4.1.6

4.1.3 Critical Appraisal Methods for Determining Validity of Knowledge

The ability to critically appraise information for validity is paramount for the SAW. Grey literature was identified by the majority of participants as a key source of information, yet grey literature may or may not be peer reviewed. The same holds true for many published journals. It is ultimately the responsibility of the consumer to make certain the information contained within is valid.

Results of the study suggest that the extent to which critical appraisal is used in the evaluation of information gathered for the purpose of decision making varies from one individual to the next. At one end of the spectrum were individuals who were quite comfortable evaluating the appropriateness of the research methodology of a given study. At the other end were individuals who stated that they were not comfortable with any part of the appraisal process. As with the search for evidence the majority of participants discussed that they had another individual perform this task for them. Implications of this are discussed in section 4.1.7.

4.1.4 Processes for Integrating Internal and External Evidence

Evidence-based practice is underpinned by the principle that scientific evidence alone is never sufficient to guide decisions. The application of the principles of EBP, through the process of EBDM therefore involves the integration of both internal and external evidence. External evidence includes, but is not limited to information from: databases; text books; journals; and relevant experts. Internal evidence consists of knowledge acquired through: formal education and training; general experiences accumulated through daily practice; and specific experience gained through individual clinician-client relationships (client's expectation and judgment). To make a decision using the EBDM process, one must be cognizant of both forms of evidence and integrate the two to arrive at a decision. Results from this study suggest the two forms are considered when decisions are being made, and that weight is placed on scientific research in recognition of the hierarchy of evidence. Integrating both forms of evidence to help guide decision-making might be considered a strength of this workforce.

4.1.5 Evaluation Methods for Assessing Outcomes of Applied Decisions

The final step in the EBDM process is the evaluation of the applied decision. This is a vital step providing the decision-maker with the opportunity to assess the decision for confirmation of effectiveness and/or identification of areas for improvement. It would appear that the most common form of evaluation used in Addiction Services is for satisfaction with service delivery rather than in the form of evaluating specific outcomes

of newly created programs or services. One possible explanation for this reliance on satisfaction-based evaluations is that defined outcomes are rarely, if ever used in the treatment of individuals with addiction. Therefore, one cannot evaluate a program or treatment modality for effectiveness or for areas of improvement if successful behavioural outcomes have not been defined.

4.1.6 Understanding of Principles of Evidence-Based Practice

The majority of participants demonstrated an understanding of the principles of EBP. Recognition that research evidence alone is never sufficient to guide decisions was apparent by participant's discussions of the need to consider client preferences and values as well as other sources of internal evidence with research (external) evidence when making decisions pertaining to programs, policies, services, and supports. Furthermore, participants demonstrated recognition of the need to consider hierarchy of evidence when making decisions. This recognition was apparent by participant's discussions relating to the need to consider relevant high quality sources of evidence, and by placing weight on scientific evidence when making decisions.

4.1.7 Perception of Agency as Evidence-Based

The majority of the participants in this study perceived the decisions made by themselves, and by their organization as a whole, to be evidence-based. Given that Senior Management demonstrated an understanding of the principles of EBP this belief is understandable. However, given their lack of demonstrated knowledge and use of the skills needed to apply the principles of EBP, this belief may be unfounded. The lack of knowledge and use of the skills needed to apply the principles of the EBP process is underscored by the disclosure of more than half of the participants of a lack of comfort and experience with research. For example, lack of skill in defining a researchable question; lack of skill in gathering and appraising information related to the question; and a failure to evaluate the behavioural outcomes of programs, services, and supports. Furthermore, the reliance on other individuals to conduct searches for, and appraisal of evidence, may be a concern.

The roles for the individuals identified as providing decision support (RSOs, knowledge exchange facilitators, librarians, and others) do not currently fall under any of the designated occupational clusters, and therefore do not have defined competency profiles, role descriptions. Because competency profiles do not exist for these individuals within the SAW, there is no expectation of competency for EBP. Therefore, there is no guarantee that the information ultimately provided to Senior Management represents all best available internal and external evidence. What is needed therefore, are revisions to the occupational clusters as defined by the CCSA (2010) to include this group of individuals. Once such revisions are made, clearly defined competency profiles, role descriptions, and examples of successful behavioural indicators can be attributed to this group. If the skills needed to apply the principles of the EBDM process are included in the profiles of these individuals, greater reliance may be placed upon them.

4.1.8 The Presence of Evidence-Based Decision-Making in School Curriculum

When considering the application of the principles of EBP through the skills defined through EBDM, it should be remembered that these core skills were not necessarily included in health professions curricula prior to the late 1990's. Most study participants completed their formal education prior to this time period, thus it stands to reason that these participants may not have had the opportunity to develop these sets of skills through their formal education. However, participants would still have received formal training in critical thinking, problem solving, and evaluation which underpin the EBDM process.

4.1.9 Contextualization of Knowledge

Context of the work environment influenced decision-making: financial restraint and limited resources were described as key factors contributing to the contextualization of research findings. Often times what is found to be the best available program, service or support (the gold standard), cannot be implemented as prescribed due to financial and other resource-related constraints. As a result, the program, service or support is altered to fit within available resources.

4.2 STUDY COMPARISONS

A recent Canadian study by Jack et al. (2011) explored the use of evidence-informed decision-making (EIDM) among Canadian addiction service professionals working in agencies serving women. The study looked at the types and sources of evidence decision-makers report using; how decision-makers at different levels within an organization report using research evidence; and factors that influence the use of EIDM. Jack and colleagues (2011) found that decision-makers reported using: research evidence; best practice guidelines and perceived best practices; local program evaluations; client needs assessments; expert opinion; personal professional experience; and personal experiences of addiction and recovery. Unlike the current study where participants reported placing greatest importance on research evidence in decision-making, participants in the study by Jack and colleagues (2011) placed greater importance on local program evaluations, best practices, professional judgment, and the recommendations of perceived experts in the field of addictions. One possible explanation for the difference in preference of evidentiary sources could be the difference in participant populations. In the study by Jack and colleagues (2011) participants were employed primarily in community-based organizations (CBOs) whereas in the current study participants came from provincial District Health Authorities (DHAs). Community-based organizations tend to be grass roots organizations, offering services on a not for profit basis, operating outside the scope of government organizations and receive funding through myriad sources. District Health Authorities are under the mandate of the DHW and receive funding and are responsible to, the DHW. Previous research has suggested that individuals working for CBOs show a preference for data collected locally because it is perceived as more relevant to the local context than are published research findings (Kothari & Armstrong, 2011). It is also possible that the findings from Jack and colleagues (2011) represent a lack of knowledge and skill relating to the application of the EBP principles. The preference for evidentiary sources other than published research findings could be due a lack of experience with research, and skill and knowledge for finding, appraising, and applying research findings to decisions. However because Jack and colleagues (2011) did not measure or evaluate their participant's knowledge of EBP principles, or the knowledge and skills required for applying those principles, such comments are speculative. Likewise, Jack and colleagues

investigated reported barriers to the use of evidence in decision-making, with participants reporting a lack of time, competing priorities within the workplace and a significant gap between research and practice as significant barriers. However, without first knowing the capacity of the decision-makers in question to apply the principles of EBP via the skills defined by the EBDM process, it is uncertain what use self-identified barriers provide.

The authors go on to suggest that this influencing by experts holds great promise for addiction agencies treating women because prior research (Flodgren et al., 2007) has shown that expert opinion, especially when espoused by local opinion leaders, has a positive effect on the uptake of evidence-based practices. Given the findings of the current study, the statement by Jack and colleagues (2011) seems somewhat premature. At the very least, it is premature for the field of addictions in Nova Scotia where Senior Management may require development of skills needed to apply the principles of EBP. Until Senior Management develops sufficient competency in these skills, the reliance on expert opinion could result in the uptake of practices that may not reflect the best available evidence.

No other studies have assessed the knowledge and use of the skills needed to apply the principles of EBP in the addictions workforce. To date, studies in the area of addictions have primarily investigated the implementation and use of EBP. These studies report a consistent gap, as much as 15 years, between what current research indicates as best practice, and what is practiced in the field (Lundgren et al., 2011; Amodeo et al., 2011; Garner, 2009; Miller et al., 2006; McGovern et al., 2004; Dobbins, Ciliska, Cockerill, Barnsley, & Di Censo, 2002). A number of the studies in this area have also specifically examined knowledge transfer and exchange strategies with the goal of identifying specific strategies to increase the uptake of EBPs (Reimer, Sawka, & James, 2005). Dobbins and colleagues (2002) developed a framework for the dissemination and utilization of research for healthcare policy and practice. They identified numerous variables related to the dissemination and utilization of research including innovation, organization, environment and the individual. With regard to the individual they identified a number of variables that could act as barriers to the use of research evidence

including: a perception that research findings are not relevant to one's context; perceived availability of research evidence; and limited critical appraisal skills. It seems likely that given the significant peer reviewed literature in addition that these barriers are in fact mediated by a lack of skills in finding and critically appraising scientific literature.

4.3 RELIABILITY AND VALIDITY OF STUDY

As previously discussed in Chapter 2, a variety of techniques and procedures exist that can be used to increase the validity of the data in qualitative inquiry (Carlson, 2010; Morse et al., 2002). The current study employed: reflexivity, the use of the constant comparison method, the use of an audit trail, the use of member checking (Carlson, 2010), and the use of triangulation (inter-coder reliability, independent verification of themes).

Reflexivity in qualitative research, as discussed in Chapter 2, is the process of recognizing and explicitly stating one's own "personal biases, assumptions, and aspects their background that could influence the decisions they make" (Carlson, 2010, p1104). From the beginning of the study it was noted that the research team had a preconception of the participant's level of knowledge of the EBP principles and their use of the skills defined in the EBDM process. The assumption was that the Addiction Services workforce was not familiar with the principles or skills needed for applying these principles. Attention was paid to the creation of the interview guide, as well as the selection of the interview format to ensure that this bias did not influence the results of the study. Participants responses were analyzed based on content with particular attention paid to any process as described. By analyzing the data in this manner a participant unfamiliar with the language of EBP could still be considered to follow it, if the process they described was in fact similar.

Another technique employed in this study to enhance the validity of the findings was the constant comparative methods (Humble, 2009; Morse et al., 2002; Hewitt-Taylor, 2001). The constant comparative method is used in conjunction with data that is being coded into emergent themes (Hewitt-Taylor, 2001). As analysis of the data proceeds, segments

of data that have already been coded, known as coded indicators (Strauss & Corbin, 1990), are constantly revisited and compared with similarly coded indicators (indicators that share the same code) to ensure that the code is applied consistently throughout the analysis process. This technique was employed during the coding of the transcripts to ensure that drifting from the original coding scheme did not take place. Inter-rater reliability for the thematic analysis was achieved by having a second, independent member of the research team read the transcriptions and generate his/her own categories and themes. A comparison was then be made between the two lists of themes and any inconsistencies were discussed and consensus was reached. The process used to achieve consensus was to revisit the original transcripts and field notes and discuss the segments used to arrive at a theme.

An audit trail was also maintained for the entire research process. Memoing was maintained for all components of the study, including, but was not limited to: decisions concerning the development of the interview guide, the coding scheme, and application of the codes to transcripts. Field notes were recorded for each interview and kept as part of the participant file. Drafts for each stage of the thematic analysis were maintained so that the progression, or evolution, of the analyses could be reflected upon. As well, field notes plus audio recording will be kept in a secure location for a period of seven years after the completion of the study.

Member checking was also used in the current study. Member checking may take a variety of forms (Carlson, 2010), for the current study participants were asked to review the transcripts and elaborate, clarify or otherwise edit their responses after the initial transcription was completed. As previously discussed, participants made corrections to spelling and grammar, but did not make any revisions to the content of transcripts.

Data in this study was analyzed independently by both the PI and another member of the research team. To assure consistency in code assignment, a test of inter-coder reliability (between the 2 coders) was performed using a sample of responses from each of the interview transcripts to ensure that the coders were interpreting the data and assigning

codes in a similar manner. In the event of a disagreement or confusion, the two team members discussed the text in light of the overall question response, and came to a consensus. Independent thematic analyses were also performed and compared. Any differences were discussed between the two team members and consensus was achieved.

4.4 STUDY LIMITATIONS

Due to the applied nature of the study, total control of study variables was neither possible, nor desirable. This lack of variable control is a necessary trade-off in order to derive findings that are of use to the field of study, and can literally be applied. This increase in applicability (external validity) comes as the result of a decrease in internal validity. For example, random sampling was not possible in the study because the population of interest was not sufficiently large to allow for it, thus purposive sampling was necessary. Another potential limit to the study concerns the sample itself. A purposive sample of decision-makers was selected, and while this sample consisted of nearly 50% of Addiction Service's Senior Management in Nova Scotia, it did not include Senior Management from all of the Addiction Services agencies, therefore limiting the ability to generalize the findings of this study to the entire province of Nova Scotia. However, the results of this study show that the methods employed are a feasible means of capturing such data, and may act as a pilot for larger provincial or national study.

4.5 SIGNIFICANCE AND FUTURE DIRECTIONS

This study has provided insight into the capacity of Senior Management in Addiction Services in Nova Scotia for EBP. It has demonstrated that Senior Management understand the principles of EBP: that being that research evidence alone is insufficient to guide decisions, and that within evidence a hierarchy exists. What was also determined however, was that Senior Management may require development of the skills needed to apply the principles of EBP. These findings are of particular importance given that Senior Management are ultimately responsible for all decisions pertaining to programs, policies, services and supports in Addiction Services agencies in the province of Nova Scotia. Of equal importance is the realization that while Senior Management believe Addiction

Services to be an evidence-based organization, the need for development of skills for applying the principles of EBP suggests that this may not be the case.

These findings are significant as they provide evidence to support the development of programs for enhancing the knowledge and use of skills in the SAW in Nova Scotia. A review of the indicators of proficiency for the CCSA behavioural competencies, reveals that nine of these competencies require ability in EBP; these results would suggest that Senior Management may not be meeting these competencies. The results of this study provide evidence in support of the need of the development of service standards, and orientation and training programs that support the development of EBP in the SAW.

4.5.1 Policy Implications and Recommendations

The findings of this study have the potential to impact both existing and future policies within Addiction Services. Given that the findings of this study reveal the possible need for the development of the skills needed to apply the principles of EBP among Senior Management, and further, given that outcome evaluation based on factors other than participant satisfaction, has not been a strength in the field of substance abuse, one key policy recommendation would be that all existing programs and services offered by Addiction Services in Nova Scotia undergo formal, objective outcome evaluations. At present, such evaluations may need to be contracted out to an external firm specializing in program evaluation; once the skills needed to apply the principles of EBP have been mastered by the SAW, such evaluations could be conducted in-house. Possible indicators of success could include: a reduction in the number of addiction-related emergency room visits by Addiction Services clients; a reduction in number of addiction-related hospitalizations by Addiction Services clients. When formulating the indicators of successful behavioural outcomes for the programs and services it would be advisable for the SAW to work in close collaboration with the contracted firm to ensure appropriate indicators are agreed upon.

A second policy recommendation stemming from the findings of this study relate to the funding of Addiction Services agencies and the types of programs and services offered in

Nova Scotia. To increase the use of EBP, in the form of evidence-based programs and services (evidence-based treatments), special funding incentives could be built into the system at the provincial level. In this way any agency that could successfully demonstrate the efficacy of the programs and services offered could receive additional funding. This funding could then be used to promote educational/knowledge translation and exchange events that would aid in the dissemination of these programs and services to other addiction agencies in the province who do not currently employ similar methods. This measure could be taken further, funding could be made dependent on the offering of evidence-based programs and services, with less funding provided to those agencies who continue to offer programs and services that have been shown to be non-efficacious.

A third policy recommendation would be to mandate the creation of additional Quality and Research Utilization Divisions, similar to the one in Pictou County Health Authority, across the province, and across Canada as well. A sure way to increase the use of EBP by the SAW is to bridge the link between service provision and pertinent research in the field. This bridging is reflected in the work currently undertaken by the individuals employed by the QRUD in Pictou County health Authority, and has the potential to help decrease the gap between what research indicates as best practice, and what is practiced in the field. The implications of this are particularly important given the acknowledgement of the significant knowledge-to-action gap that currently exists in the substance abuse field.

A fourth policy recommendation would be that Addiction Services continue to receive the Drug Treatment Funding Program funding for the Knowledge Translation/Exchange Facilitators, and the provincial coordinator, currently employed by Addiction Services. The work undertaken by the KEFs is already in alignment with the recommendations proposed within this report, and has great potential to continue to build EBP capacity within the SAW. Already the funding of these positions has led to the recognition of Addiction Services in Nova Scotia as being at the forefront of the field nationally in terms of the evidence-based movement; continued funding of these positions will see that

Addiction Services in Nova Scotia stays at the forefront nationally, and could lead to international recognition.

4.5.2 Knowledge Translation Strategy

The current project was an applied health services research project and was completed in collaboration with personnel from the QRUD, Addiction Services, Pictou County Health Authority. While the study was completed in collaboration with individuals working within a specific Addiction Services agency in Nova Scotia, the results of the study provide information that is of importance to all of the provincial Addiction Services agencies as well as those operating in other provinces. As such, it is of great importance to ensure appropriate dissemination of the findings to both the provincial and national SAW. To that end, the following knowledge translation strategy will be enacted. The results of the study will be presented by the PI in collaboration with Senior Management from Addiction Services in Nova Scotia, in a public forum, free of charge, with specific invitations sent out to all of the provincial Addiction Services agencies and members of the provincial DHW. The presentation will also be open to the public. In addition to the public presentation, electronic copies of the report will be made available to all of the Addiction Services offices in Nova Scotia.

In an effort to increase the uptake of the findings nationally, as well as in the academic community, a submission will be made to the Issues of Substance by-annual conference hosted by the CCSA, and publications will be submitted to both general and discipline specific scientific journals.

The need to both develop and enhance the knowledge and use of the skills of EBP in the Addiction Services workforce in Nova Scotia was recognized (albeit anecdotally) by the DTFP-funded knowledge exchange/translation workforce. The need for evidence in support of their anecdotal findings led to the development of the current study.

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APPENDIX A Senior Management: Behavioural Competency Indicators Linked to Evidence-Based Practice

Competency: Adaptability/ Flexibility
<ul style="list-style-type: none">• Gathers information from a variety of sources to assess changing plans and priorities and makes informed choices based on available information• Prepares for change and adapts own plans and priorities accordingly• Provides advice and guidance to others to assist them in adapting to difficult or changing situations

Competency: Analytical Thinking and Decision Making
<ul style="list-style-type: none">• Consults others, researches information and determines relevant patterns or trends to understand the issue or problem and identify potential causes• Identifies multiple courses of action, considering who may be affected by a decision as well as potential outcomes• Evaluates the advantages, disadvantages and effectiveness of alternate approaches and possible courses of action• Identifies potential problems or risks associated with a decision or action and uses critical thinking to implement plans that mitigate their effects• Uses logic, past relevant experience, lessons learned and evidence-based criteria when forming conclusions and making decisions• Determines when to act quickly/decisively and when to deliberate on or contemplate decisions• Makes informed and timely decisions to determine a course of action in complex, ambiguous or urgent situations• Makes decisions in alignment with organizational values and directions• Develops creative, forward thinking options and recommendations, soliciting opinions of others to gain different perspectives• Makes decisions based on evidence-based practice, reasoning and clinical experience and in consultation with key stakeholders as appropriate• Identifies and respectfully challenges judgment or decision making that is unclear or unsupported• Evaluates the effectiveness and efficiency of a solution after implementation• Identifies the potential impacts that trends or events may have on services, clients and/or employees

Competency: Continuous Learning

- Takes responsibility for one's own learning and professional development
- Self-assesses and seeks feedback from others to identify skills and knowledge gaps and seeks to close these through self-study, continuing education and seeking assistance or advice, and coaching
- Keeps up to date with current research, literature and other developments relevant to the field and applies learning to one's practice
- Draws on the knowledge of others through networking, teamwork and partnering
- Actively pursues information, competency-based and other learning opportunities, beyond current job role or area of expertise, that add value in current position
- Seeks learning opportunities in rapidly evolving and emerging subject areas within and peripheral to one's professional practice
- Participates in research to advance the knowledge in the field
- Actively contributes to building a learning culture, encouraging learning and knowledge sharing and advocating for professional development activities
- Supports and/or supervises others in their learning and professional development by providing feedback, coaching, mentoring and resources, and by identifying learning goals and opportunities for professional development

Competency: Creativity and Innovation

- Implements alternate evidence-based techniques and approaches rather than using the same solution repeatedly for all clients
- Based on evidence-based practice and drawing upon a broad empirical and theoretical knowledge base, adapts existing approaches and techniques to meet unique, situation-specific needs
- Creates new ideas, solutions or approaches to ongoing challenges and problems
- Explores best current knowledge in the field and adapts and applies this knowledge to reflective practice as a source of inspiration and insight into new options and solutions
- Draws correlations between seemingly unrelated issues and ideas and identifies what is not apparent to others
- Develops innovative, contextually relevant intervention methodologies that incorporate both the rigour of research and the shared experience of practitioners and clients
- Effectively facilitates brainstorming activities

Competency: Developing Others

- Evaluates group learning needs and plans group developmental activities based on sound evidence and experience

Competency: Effective Communication

- Integrates and synthesizes information from appropriate sources into written work
- Practices knowledge exchange principles in both written and verbal communication (simple, clear, direct, respectful, timely, evidence-based)
- Synthesizes complex documents and ideas from multiple sources into written material

Competency: Self Care

- Develops self care best practices that will assist self and peers in coping with work challenges such as stress, fatigue and difficult situations e.g., the appropriate use of humour to relieve tension

Competency: Ethical Conduct and Professionalism

- Incorporates best practice knowledge into work whenever possible

Competency: Leadership

- Conducts needs analyses to determine if change is necessary, and identifies and implements change strategies

APPENDIX B Interview Guide

1) What kinds of information do you use that you would consider as evidence when making decisions?

2) Do you use a structured process or model when making decisions in your work?

3) How do you make sure you are asking the right question?

4) When collecting information/evidence how do you know when to stop? When you have it all?

Prompt: A few minutes ago we discussed a list of evidence sources, you identified several that you use in your decision-making processes. I would like to discuss the ease of access concerning these sources.

5) How do you know the information provided in these publications (studies, reviews) is strong?

Prompt: Let's create a scenario, a new program guideline is going to be introduced in your workplace and you have been asked to evaluate it before it goes live, how would you do this?

6) How do you determine that you are answering the question you set out to answer?

Prompt: How do you evaluate the outcome to make sure you are doing what you set out to do?

7) What are some of the barriers you might face when using evidence in the decision-making processes of your organization?

8) Are there any specific facilitators to using evidence in decision-making processes in your organization?

9) Do you have any further comments concerning what was discussed? Anything else you would like to add?

APPENDIX C CCSA Copyright Permission Letter



Canadian Centre
on Substance Abuse

Centre canadien de lutte contre
l'alcoolisme et les toxicomanies

January 27, 2012

Matthew Murphy
Graduate Student
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4191 Shore Road, Ponds, NS, B0K 1G0

Dear Mr. Murphy:

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Yours sincerely,



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